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ABSTRACT

Extant Navajo community studies conducted since the 1930's were surveyed. Data for selected social, economic, and demographic variables as reported in these studies were compared. Each community study was placed in one of three geographic classifications: western Navajo, eastern Navajo, and off-reservation. Each on-reservation area was subdivided into rural and wage work communities for comparison purposes. Comparisons among variables were made on three axes: rural-urban, east-west, and early-recent. Processes of change from rural traditional life to a modernized wage work economy was elucidated by comparing rural communities with wage work communities studied within the same decade and, whenever possible, within the same region. Since the eastern portion of the Navajo Reservation was thought to have had more intense exposure to national influences, east-west comparisons were made to highlight the directions change was taking in the absence of comparable diachronic data. Throughout the review, comparisons among studies were made difficult by a lack of uniformity in the use of definitions and techniques of data gathering. Also differences among areas were exaggerated by the use of small sample populations even when the research design and method were adequate. Regularities of variation over time, from region to region, and between wage work communities and pastoral communities were described. (Author/NQ)

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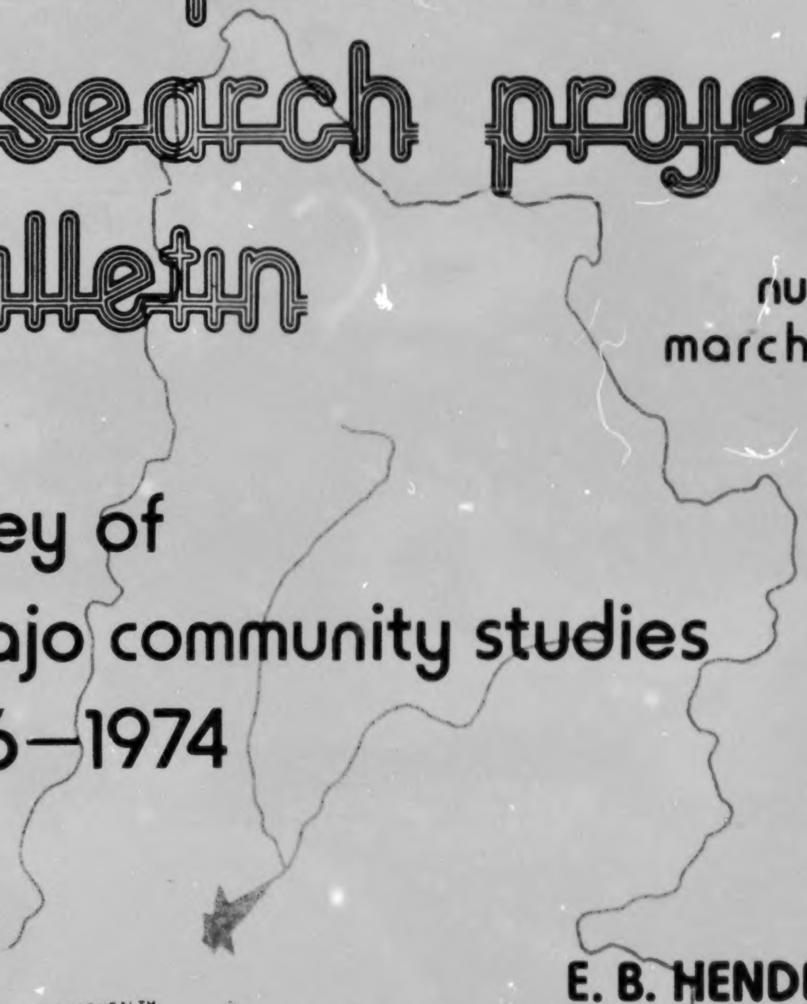

survey of navajo community studies 1936–1974

E. B. HENDERSON
J. E. LEVY

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SURVEY OF NAVAJO COMMUNITY STUDIES
1936-1974

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March 1975

LAKE POWELL RESEARCH PROJECT

The Lake Powell Research Project (formally known as Collaborative Research on Assessment of Man's Activities in the Lake Powell Region) is a consortium of university groups funded by the Division of Advanced Environmental Research and Technology in RANN (Research Applied to National Needs) in the National Science Foundation.

Researchers in the consortium bring a wide range of expertise in natural and social sciences to bear on the general problem of the effects and ramifications of water resource management in the Lake Powell region. The region currently is experiencing converging demands for water and energy resource development, preservation of nationally unique scenic features, expansion of recreation facilities, and economic growth and modernization in previously isolated rural areas.

The Project comprises interdisciplinary studies centered on the following topics: (1) level and distribution of income and wealth generated by resources development; (2) institutional framework for environmental assessment and planning; (3) institutional decision-making and resource allocation; (4) implications for federal Indian policies of accelerated economic development of the Navajo Indian Reservation; (5) impact of development on demographic structure; (6) consumptive water use in the Upper Colorado River Basin; (7) prediction of future significant changes in the Lake Powell ecosystem; (8) recreational carrying capacity and utilization of the Glen Canyon National Recreational Area; (9) impact of energy development around Lake Powell; and (10) consequences of variability in the lake level of Lake Powell.

One of the major missions of RANN projects is to communicate research results directly to user groups of the region, which include government agencies, Native American Tribes, legislative bodies, and interested civic groups. The Lake Powell Research Project Bulletins are intended to make timely research results readily accessible to user groups. The Bulletins supplement technical articles published by Project members in scholarly journals.

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ABSTRACT

This Bulletin is a survey of most of the extant studies which have been made of Navajo communities since the 1930s. Data for a selected number of social, economic, and demographic variables as reported in these studies are compared. There are two major reasons for making such a copious review of the literature at the present time.

First, most environmental impact statements, and many surveys made for planning purposes, rely upon secondary data. It is important to determine whether these secondary data are sufficiently accurate and presented in a suitable form to be used with confidence in impact studies of the Navajo population.

Second, limited study of contemporary "impact" areas runs the risk of attributing to the economic developments of the moment all the changes which are measurable from a hypothetical prior state. It is imperative to construct a baseline from available data which has some time depth so that change due to causes other than the type receiving present attention can be identified.

In order to achieve these ends, we have made comparisons among variables in previous Navajo studies on three axes: rural-urban, east-west, and early-recent. Processes of change from a rural traditional life to a modernized wage work economy should be elucidated by comparing rural communities with wage work communities studied within the same decade and, whenever possible, within the same region. The eastern portion of the Navajo Reservation is thought to have had more intense exposure to national influences. In consequence, east-west comparisons should highlight the directions change is taking in the absence of comparable diachronic data. Ideally, comparisons should be drawn from studies of the same community or region made at different periods of time.

Each community study surveyed has been placed in one of three geographic classifications: western Navajo, eastern Navajo, and off-Reservation. Each on-Reservation area has been subdivided into rural and wage work communities in the comparative Tables presented in the Appendix of the Bulletin.

In our opinion, it is a very risky procedure to use previous community studies for impact statements or planning schemes because of the uneven quality of the research and great variability of results. Throughout our review of extant studies, we found that comparisons among studies are made difficult by a lack of uniformity in the use of definitions and in techniques

of data gathering. In addition, differences among areas are exaggerated by the use of small sample populations even in those instances where the research design and method were adequate.

Despite these sources of inaccuracy, there is every indication that a considerable amount of variation among certain Reservation areas is very real. In the concluding section an attempt is made to describe regularities of variation over time, from region to region, and between wage work communities and pastoral communities.

Regional economic differences are difficult to describe in a meaningful way. Economic developments over time, however, are quite evident and show clear trends. The proportion of the total income derived from craft products has declined precipitously since 1940, and reliance upon stock-raising has also declined in all areas. Conversely, the reliance upon welfare income and wage work has increased.

SURVEY OF NAVAJO COMMUNITY STUDIES, 1936-1974

INTRODUCTION

During 1972 and 1973, the Anthropology Subproject of the Lake Powell Research Project surveyed three general areas in the western part of the Navajo Reservation in an attempt to assess the impact of power production and strip mining on the local Navajo populations. The areas around Page in Arizona are being affected by the creation of Lake Powell and by the construction of the Navajo Generating Station. Navajos living on and adjacent to Black Mesa are being affected by the strip mining of coal by the Peabody Coal Company.

In an effort to establish a baseline for the measurement of change, two tasks were undertaken. First, a wage work community (South Tuba City) and a pastoral area (Red Lake) were surveyed on the assumption that they were relatively unaffected by the strip mining and power production activities and because data from earlier periods had already been collected in these areas. These two samples were to be used as control groups for comparison with the "impact" areas.

The second task was to review all published Navajo community studies. The major purpose of this effort was to determine just how typical of other Navajo communities the control groups were. Not only do Navajo communities change over time, but they also seem to differ widely from each other. It was important to learn whether differences between communities were patterned or haphazard and whether they were due to identifiable causes or to the use of dissimilar research techniques, definitions, and sampling procedures.

Presently, the Navajo constitute the largest Indian tribe in the Southwest. In 1971, the Navajo population consisted of about 131,000 people living on, and adjacent to, the Reservation.

From 1868, when the original Reservation was established, until the early 1900s, the Navajo population grew and the Reservation was expanded; it now covers parts of Arizona, New Mexico, and Utah, with a total area as large as the State of West Virginia. The Reservation, along with some off-Reservation areas occupied by Navajos, comprises over 18.5 million acres with varied climate, topography, and vegetation (Figures 1 and 2).

Since 1930, the Navajo population has been continually growing on a restricted land base. Federal policies have attempted to alleviate this problem by regulating grazing, providing alternate means of subsistence, and encouraging emigration.

In this Bulletin, we have attempted to survey as completely as possible the available literature on Navajo community studies. We have included studies of local Navajo populations in several areas of the Reservation in order to illustrate variations due to natural environment as well as those caused by economic developments occurring in such areas as Fruitland, New Mexico.

In addition, we have included as many studies of off-Reservation Navajo as possible. The populations of Canyoncito and Ramah in New Mexico have been placed

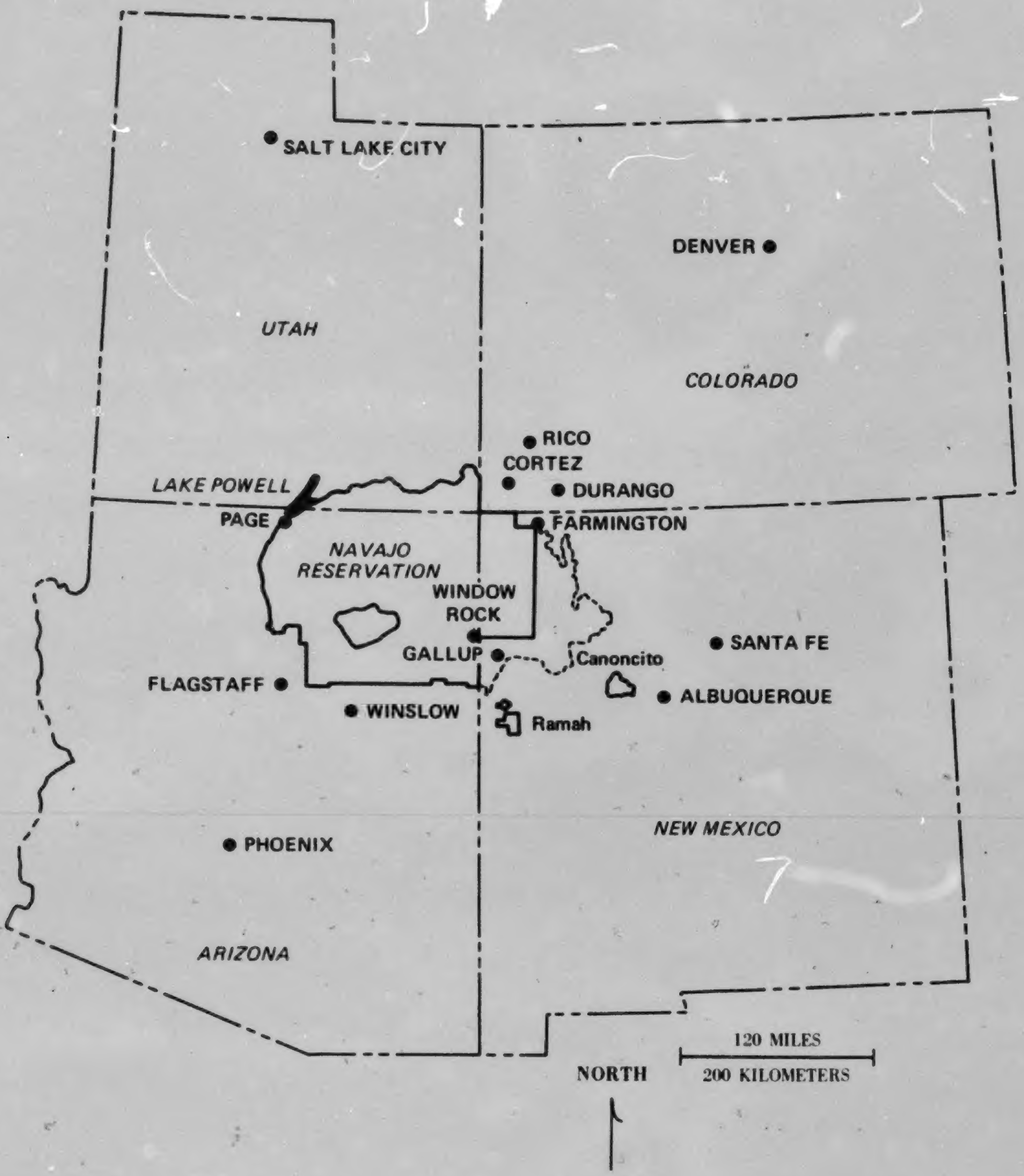
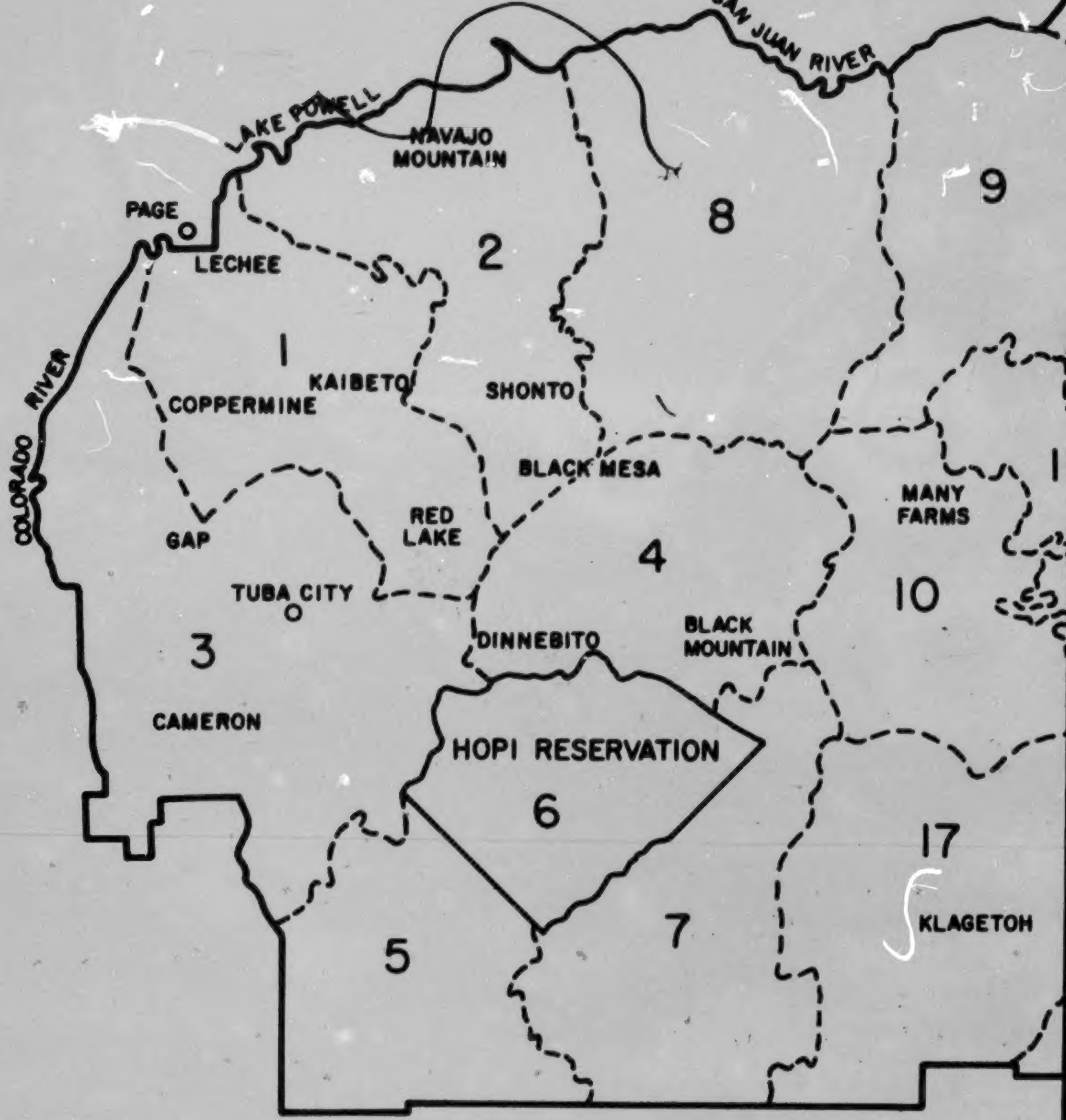
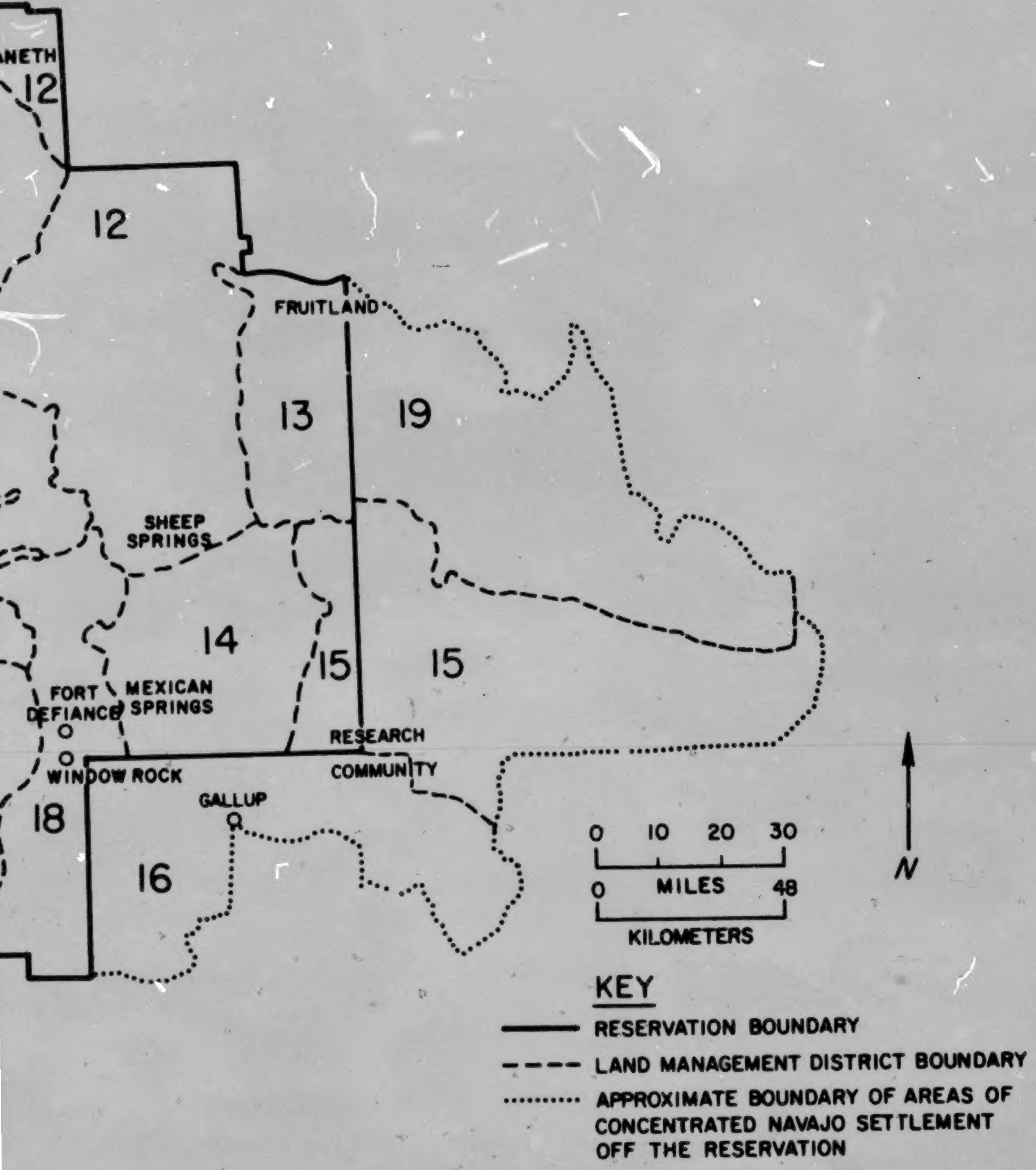


Figure 1: Index Map Showing Location of Navajo Reservation and Some Off-Reservation Communities. Bellemont is about 10 miles west of Flagstaff and Fort Defiance is about 5 miles north of Window Rock.



NAVAJO COMMUNITIES *reviewed in this survey in Arizona, New Mexico, and Utah*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KEY
RESERVATION BOUNDARY
LAND MANAGEMENT DISTRICT BOUNDARY
APPROXIMATE BOUNDARY OF AREAS OF CONCENTRATED NAVAJO SETTLEMENT OFF THE RESERVATION

Figure 2

in the section of the Bulletin dealing with eastern Navajo communities. Off-Reservation studies include such diverse groups as relocated Navajos in large urban centers, wage workers in Rico (a mining town in Colorado), Navajos living in towns near the Reservation, and the Navajos who were relocated to the Colorado River Indian Reservation in the 1950s.

Despite our efforts, there are several dissertations, unpublished reports, and some articles which were inaccessible to us. We do, however, feel that we have reviewed all the major studies of specific Navajo populations. General works have not been reviewed because our intent is to present descriptive rather than analytical materials. The reader interested in obtaining general background material is referred to Underhill (1956), Leighton and Kluckhohn (1948), Kluckhohn and Leighton (1946), and Kelly (1968). Those wishing to attain a more complete understanding of Navajo social organization are referred to Aberle (1961).

The nature of Navajo communities has been discussed by Kimball and Provinse (1942), Hill (1940), Aberle (1961), and Levy (1962c), among others. These authors do not always agree, and they emphasize different criteria used to define a community. In our review, communities are most often the local groups noted by Kluckhohn and Leighton. In urban areas, studies deal with Navajo populations which definitely are not communities and rarely are anything more than aggregates of individuals residing in a given city at a given point in time.

This variability in the types of populations reviewed makes comparisons impressionistic at best. In addition to the variations introduced by changing conditions over time and by differences due to geography, the reader will note that the task of making comparisons is further complicated by (a) the lack of uniform definitions of such seemingly simple variables as household, per capita income, and residence; (b) the small size of most samples; and (c) the haphazard manner used in selecting samples.

Nevertheless, as researchers and planners increasingly turn their attention to the current developmental needs of the Navajo Tribe, it is important to make available a resumé of pertinent works which would otherwise be difficult to review and to discuss some of the dangers involved in accepting these research findings at face value.

[Ed. Note: Each of the following sections which deals with a specific population includes the bibliography of studies done on that population. Some sources in the bibliography are not listed in the text. The bibliographies are intended to help the reader who wants a quick reference guide to a specific community. The final bibliography at the end of this Bulletin includes all references cited in the entire text.]

5

I. THE NAVAJO RESERVATION

HUMAN DEPENDENCY SURVEYS, 1936 and 1940

Between 1935 and 1942, a land use and conservation program was undertaken by the Bureau of Indian Affairs (BIA) and the Soil Conservation Service. Two massive statistical summaries were produced, one for 1936 (U.S. Dept. of Agriculture, Soil Conservation Service, 1939) and another for 1940 (U.S. Dept. of Interior, BIA, 1941). In addition, a paper on Navajo social organization by Kimball and Provinse (1942) resulted from the Reservation survey research.

These surveys provide baseline data for the Navajo Reservation during the Great Depression and the years of stock reduction. Economic and demographic change over time as well as patterns of regional variation can only be gauged with adequate data from the years prior to World War II. Unfortunately the use of the 1936 and 1940 surveys is difficult at best. Pertinent data from these surveys are presented in Part V of this Bulletin. In this section we discuss some of the sources of inaccuracy and assess some of the variability between regions which is revealed in the Tables.

Demography

The population figures given in the 1936 survey are deficient: Land Management District 8, the Dennehotso region, and about 70 percent of Unit 12 were completely omitted. Two years were required for the enumeration, and the accuracy of enumeration varied considerably from one unit to the next. Johnston (1966:121-127) compared the 1936 figures with those for 1940 and found increases of between 6 to 9 percent annually in most units, showing the result of poor enumeration in 1936 rather than an indication of a mammoth population explosion. The 1940 survey was more complete and therefore more accurate (Johnston 1966:123). However, it is difficult to determine what effect inaccurate enumeration has on computing household size and per capita income.

Population densities in 1940 ranged from a low of 0.7 persons per square mile in Unit 2 (Shonto and Navajo Mountain) to highs of 3.2 and 4.1 per mile in Units 14 and 18 (Tohatchi and Fort Defiance). Population densities were highest in the eastern end of the Reservation and lowest on the western end. Population increases between 1936 and 1957 were greatest in the northeastern part of the Reservation, especially around Shiprock and Fruitland (Johnston 1966:130).

The basic social unit used by the surveys was the "consumption group." It is not clear whether these groups represent households or camps. The average size of the consumption groups falls somewhere between the household and camp sizes reported by other investigators during the same period. If a consumption group is the same as a household, then average household size has dropped between 1940 (range 6 - 7.9) and the 1970s (range 5.2 - 6.9) for on-Reservation areas. Such a drop is unlikely because in most areas where restudies have been conducted there have been increases in household size. On the other hand, if a consumption group is considered to be a camp, then average camp size has increased considerably over the years. Navajo Mountain camps averaged 15 people in 1938 according to Collier.

Consumption groups in Land Management Districts (Units) 1 to 4, the western Navajo, ranged from 7.5 to 8.5 in 1936. In the 1960s, camp size for the western Navajo ranged from approximately 10 to 30 persons, and in the 1970s the average camp size appears to be declining. It is most unlikely that there would be an increase in camp size at the same time that the proportion of independent nuclear households is increasing.

The safest conclusion is that either the consumption group of the 1936 surveys did not correspond to either the camp or the household, or that the data were poorly gathered. In any event the figures cannot be used for comparative purposes.

Social Organization

Aberle (1973:187) has reviewed the data for family composition and concluded that in the 1930s approximately 53 percent of all family units were independent nuclear families. Of course, there was considerable regional variation. Collier reported 22 percent neolocality in 1938 at Navajo Mountain and 48 percent at Klagetoh in 1936. The important point is that regional variability occurred as far back as the 1930s; neolocal residence was relatively frequent at that time and is not simply a modern phenomenon.

Economics

Data for income from various sources were derived in large part from traders' records, and therefore the per capita figures are very rough estimates at best. The proportions of income from various sources reveal that there was considerable regional variability in reliance on wage work even in the less developed western portion of the Reservation. District 3, which includes Tuba City and Cameron, derived 43 percent of total income from wages while the Shonto - Navajo Mountain area (District 2) only received 14 percent from wage work. The Klagetoh - Ganado area (District 17) derived 23 percent of its income from wages. Generally, the eastern end of the Reservation had higher per capita incomes and a greater reliance on wage work than did the western part.

While the figures reported by the Human Dependency Surveys must be used with the utmost caution, the indication of east-west differences and considerable variation within larger regions is probably very real. The task will be to identify the causes of these variations and to determine the existence of long-term trends.

References:

Kimball, Solon T., and John Provinse
1942 "Navajo Social Organization in Land Use Planning." Applied Anthropology 1:18-25.

United States, Dept. of Agriculture, Soil Conservation Service
1939 "Statistical Summary: Human Dependency Survey, Navajo and Hopi Reservations." Mimeographed.

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II. WESTERN NAVAJO

1. SIX NORTHWESTERN NAVAJO COMMUNITIES, 1962

In 1962, Levy reported data for the social organization of six communities on the western end of the Navajo Reservation. A sample in each community was obtained by contacting the camps of children who had been found to have positive skin tests (PPD+) in a tuberculosis (TB) survey of children in schools serving the area. Genealogies and composition of social units were obtained by interviewing the families of these children. The data gathered provide a basis for comparing certain demographic and social organizational features of western Navajo communities. Aside from possible sampling problems there may have been problems with the reliability of some of the information obtained. For various reasons "the material...from Gap and Red Lake (is) the least reliable" (Levy 1962a:9). Also Red Lake and Kaibeto were interviewed more hurriedly than were other communities (Levy 1962a:5).

Table 1.1 taken from Levy (1962a:Figure 1) lists the communities and gives average camp and household size. There was a wide variation in mean camp size but the fluctuation in household size was not as marked. The two extreme cases of camp size were at Kaibeto, where nuclear and mixed camps were common, and Dennebito Dam, where there was a high incidence of polygyny (Levy 1962a:9). Also, a higher population density could be maintained in the Dennebito Dam area because of a greater reliance on agriculture (Levy 1962a:5).

Table 1.2 shows the type of camp based on its composition, derived from an examination of collected genealogies. Nuclear polygynous camps are those in which two households are maintained by one husband. There are many more polygynous marriages subsumed in extended camps, which are camps having more than two generations of depth. Bilocal camps have households both of a married daughter(s) and a married son(s) of the camp head. For example, at Gray Mountain, one bilocal camp had four daughters and one son maintaining households within the camp. Table 1.3 (Levy 1962a:Figure 3) reflects post-marriage residence patterns by married couple rather than by camp type. Most bilocal camps appeared to be predominantly composed of couples residing matrilocally. Mixed camps are a residual category of households linked in a nonunilineal (but usually consanguineal) fashion. One of the Kaibeto camps (camp 10) illustrated such a case; it was composed of two households in which the wife in household A was sister to the husband in household B.

The Kaibeto sample seems to be the least typical of the communities in that it had the smallest camp and household sizes, the least typical distribution of camp composition types, and the highest incidence of patrilocality. The atypical character of the Kaibeto sample is a puzzling finding which is difficult to explain. A government boarding school and a field clinic had been in operation at Kaibeto for a number of years, and it may be that a better TB control program had been in force at Kaibeto for some time prior to the school survey. However, the ages of the PPD+ children (9-15 years) would not bear this out. Perhaps Kaibeto's different profile is due to chance and small sample size. There is no obvious reason

Table 1.1: Community Settlement Patterns in Northwestern Navajo Communities in 1962

Community	Total Contact Population	Number of Camps	Mean Camp Population	Number of Households	Mean Household Population	Mean Number of Households per Camp	Range in Number of Households Low - High
Gray Mountain - Cameron	267	16	16.69	43	6.20	2.68	1 - 7
Gap - Cedar Ridge	200	13	15.38	34	5.88	2.61	1 - 4
Coppermine	110	6	18.33	16	6.87	2.66	2 - 4
Kaibeto	105	10	10.50	19	5.52	1.90	1 - 3
Red Lake	137	9	15.22	24	5.70	2.66	1 - 5
Dinnebito Dam	207	7	29.57	30	6.90	4.28	2 - 7
Total	1026	61		166			
Mean			16.82		6.18	2.72	1 - 7

Source: Data from Levy (1962a: Figure 1)

Table 1.2: Camp Composition in Northwestern Navajo Communities in 1962

			Extended				
Community	Nuclear	Polygynous Nuclear	Matrilocal	Patrilocal	Bilocal	Mixed	Total
Gray Mountain-Cameron	6	1	5	0	5	0	17
Gap-Cedar Ridge	1	0	7	0	4	1	13
Coppermine	0	1	3	1	0	1	6
Kaibeto	3	0	2	2	1	2	10
Red Lake	1	0	5	0	3	0	9
Dinnebito Dam	0	1	3	0	2	1	7
Total	11	3	25	3	15	5	62

Source: Data from Levy (1960-1966 field notes)

Table 1.3: Post-Nuptial Residence[a] in Northwestern Navajo Communities in 1962

Community	Matrilocal Marriages	Patrilocal Marriages	Number of Patrilocal Marriages
Gray Mountain - Cameron	25	5	16.66
Gap - Cedar Ridge	18	4	18.18
Coppermine	9	3	25.00
Kaibeto	2	2	50.00
Red Lake	13	5	27.77
Dinnebito Dam	20	3	13.04
Total	87	22	
Mean			20.18

[a] Marriages have been counted as matrilocal or patrilocal when a living parent couple has been found in the camp. All marriages of the offspring living in the camp have then been listed. The incidence of neolocal residence has not been included in this table.

Source: Data from Levy (1962a: Figure 2) for the Kaibeto findings to be incongruous with the general western Navajo pattern.

The communities could be impressionistically gauged in terms of subsistence adaptation and acculturation. Probably all are oriented toward pastoral pursuits. The Cameron - Gray Mountain area and perhaps Kaibeto (with its government-related functions such as the clinic and school) had more emphasis on a wage-welfare adaptation. The community at Dinnebito Dam, the most "traditional" in some ways (e.g., incidence of polygyny and matrilocality), had a greater dependence on agriculture than did its neighboring pastoral communities.

Reference:

Levy, Jerrold E.

1962a "The Influence of Social Organization on Behavioral Response to a Health Activity." Ethnologist's Report: Tuba City Case-Finding Program, July, 1962. Window Rock, Arizona. USPHS - DIH. Mimeographed.

2. NAVAJO MOUNTAIN COMMUNITY, 1938 and 1962

Collier (1951) studied a group of Navajos living on Rainbow Plateau (near Navajo Mountain) in 1938. From 1961 to 1962, Shepardson and Hammond (1964) restudied the same individuals and their descendants. Later, Shepardson and Hammond (1970) also reported data for a larger area which encompassed other persons and which could be termed the "greater" Navajo Mountain Community. The "lesser" community, restudied in 1961 and 1962, was a sub-set of the larger community.

The area was settled by Paiutes before 1890. At about that time, a Navajo family of 12 to 15 individuals led by Whiteman Killer moved into the area. In 1938 there were 135 Navajos in the area (Collier 1951:42) and these 135 people were related as follows (Collier 1951:22):

113 descended from Whiteman Killer or his sister
11 married to a descendant of Whiteman Killer or his sister
5 related by blood to a descendant's affine
6 an unrelated family consisting of a mother and 5 children

In the 1961 restudy, 259 of 323 people were descendants of "Whiteman Killer or his niece and every extended family contained some descendant as consanguineal or affinal relative" (Shepardson and Hammond 1964:1033).

A breakdown of the population by clans reveals a general stability over time. The increase in the number of clans represented is due solely to males marrying in from adjacent areas. The exception to this pattern is the Paiute Salt Clan, descendants of the original Paiutes, who, while in the community in 1938, were not included in Collier's study (see Table 2.1).

The density of the area used by the people of the "greater" Navajo Mountain Community was given as 0.84 persons per square mile (Shepardson and Hammond 1970: 13). A distinction should be drawn between settlement density and use density, but the data have not been broken down in such a way as to make that separation practical. The population density on Rainbow Plateau was given as 2.5 persons per square mile (Shepardson and Hammond 1964:1034). This is an increase of 0.9 persons per square mile over the 1938 figure calculated by the same authors. By taking measurements from Collier's map, however, a population density for the study area was calculated at about 1.9 persons per square mile, a difference of only 0.6 persons. Any increase in population in a given space results in an increased population density, and it is clear that the density has increased in the area, although the figures are somewhat confusing.

The growth of population has led to a proliferation of camps, from 9 in 1938 to 21 in 1961. Table 2.2 indicates that population growth has not been accompanied by significant change in household or camp size.

Camp composition and post-nuptial residence patterns may have changed, as Table 2.3 suggests, although this is not

Table 2.1: Distribution of Individuals by Clan Membership at Navajo Mountain Community

Clan	Original Group[a] 1938 Collier Study	Original Group[a] 1961-1962 Restudy	Greater Navajo Mountain Community[b] 1961-1962
Salt	54	105	117
Bitter Water	51	81	102
Many Goats	14	56	68
Edgewater	1	30	46
Red Streak Under House	4	24	47
Standing House	7	16	33
Reed	1	5	44
He-Walks-Around	1	1	1
"Paiute Salts"	-	1	64
Folded Arms	2	1	38
Coyote Pass	-	1	1
Yucca Fruit Is Strung Out	-	1	1
Mexican Clan	-	1	1
Total	135	323	563

[a] Navajos living on Rainbow Plateau near Navajo Mountain were studied in 1938 (Collier, 1951) and from 1961 to 1962 (Shepardson and Hammond, 1964).

[b] In 1970, Shepardson and Hammond reported data collected in 1961-1962 for a larger area near Navajo Mountain.

Source: Data from Shepardson and Hammond (1964:1042; 1970:53)

absolutely clear. There is a tendency toward the preferred matrilocal camp form within the kin group restudied. In the greater community, neolocality and mixed (matri-patri) camps appear to be the favored forms.

Turning from demographic to economic variables, we find more dramatic changes at Navajo Mountain. Collier (1951:85) reported in an appendix that per capita income at Navajo Mountain was $108.23 per year. Her figures were from the 1936 Soil Conservation Service survey for the entire Land Management District 2 which includes Shonto and other communities as well as Navajo Mountain. Collier apparently assumed that District 2 was a homogeneous area in economic matters since she considered Navajo Mountain to be typical of the area. This assumption is implied in her discussion of Navajo Mountain economics in terms of the breakdown of income in District 2. This breakdown is presented in Appendix Table 1 of this Bulletin. Whether Navajo Mountain was really typical of District 2 is not known. However, judging from Collier's narrative, it seems that livestock was indeed the primary source of income and that it was much more important than wages or agriculture. In 1940, when the BIA resurveyed District 2, livestock

Table 2.2: Demographic Characteristics of Navajo Mountain Community

	Original Group		Greater Navajo Mountain Community 1961-1962
	1938 Collier Study	1961-1962 Restudy	
Number of People	135	323	581
Number of Households	22	60	112
Mean Number of Persons per Household	5.6	5.4	5.2
Range in Number of Persons per Household	2 - 23	1 - 18	1 - 18
Number of Camps	9	21	46
Mean Number of Households per Camp	2.4	2.9	2.4
Range in Number of Households per Camp	1 - 4	1 - 7	1 - 7
Mean Number of Persons per Camp	15.0	15.4	12.6
Range in Number of Persons per Camp	7 - 34	2 - 33	2 - 33

Source: Data from Shepardson and Hammond (1964:1039-1040; 1970:Appendix A) income was found to be more important throughout the District. Also income had decreased (see Appendix 1).

Thus there are two basic problems in understanding the economic situation of Navajo Mountain Community in 1938. First, there is the questionable assumption of the typicality of Navajo Mountain within District 2. The assertion that Navajo Mountain was much the same as the rest of the District is not really acceptable in the absence of evidence for its typicality. The assumption could lead to spurious associations of economic variables with other variables of much higher reliability for which Collier provided rich detail. Second, the economic situation of District 2 is clouded by the contrasting reports of surveys taken not more than four years apart. These differences may be due to survey methods, yearly market fluctuations, etc. Allowing for these weaknesses in the measurement of economic variables, it seems most likely that, at the time of Collier's work, per capita income for Navajo Mountain Community was about $108, or about $66 if only commercial income is counted.

Shepardson and Hammond (1964:1036) estimated the per capita annual income for the restudy group in 1961 and 1962 at $522.00. Adjusting the 1938 and 1961/62 figures to a 1949 standard, we find $180.64 for 1938 and $408.20 for 1961 and 1962, an increase of 126 percent during the 24-year period.

Table 2.4 shows sources of income for the greater and lesser (restudied) Navajo Mountain Community for 1961 and 1962. In

Table 2.3: Camp Composition and Post-Nuptial Residence (in percent) in Navajo Mountain Community

	Original Group				Greater Navajo Mountain Community 1961-1962	
	1938 Collier Study		1961-1962 Restudy			
	Camps (N = 9)	Marriages (N = 18)	Camps (N = 21)	Marriages (N = 38)	Camps (N = 46)	Marriages (N = 72)
Matrilocal	11	56	43	63	28	54
Patrilocal	11	33	5	24	4	22
Neolocal	22	11	24	13	37	24
Mixed	56	-	28	-	31	-
Total	100	100	100	100	100	100
Unknown		(N = 4)		(N = 22)		(N = 40)

Source: Data from Shepardson and Hammond (1964:1041; 1970:Appendix B)

Table 2.4: Sources of Income for Navajo Mountain Community, 1961-1962

Source	Navajo Mountain Restudy Group[a] 1961-1962	Greater Navajo Mountain Community[b] 1961-1962
Traditional Income		
Livestock	$ 61,807.20	$102,405.54
Agriculture	2,625.00	5,775.00
Local Enterprises	2,000.00	3,335.00
Total	$66,432.00	$111,515.54
Income from Wages		
BIA	$18,000.00	$27,216.00
USPHS	2,205.00	5,078.00
Navajo Tribal Chapter Officers	1,150.00	1,535.00
Public Works	7,600.00	14,815.00
Two Residents Working Outside	9,200.00	9,200.00
Sugarbeet Harvesters	1,200.00	1,200.00
Museum of Northern Arizona	4,700.00	6,725.00
Total	$44,815.00	$65,769.00
Income from Welfare and Free Services		
Arizona and Utah State Welfare	$14,262.00	$ 38,066.30
BIA and USPHS (Services)	40,052.00	72,044.00
Total	$54,314.00	$110,110.30
Other Income		
Social Security Benefits	$ 3,072.00	$ 3,072.00
Grand Total	168,633.20	290,466.84
Per Capita	522.00	499.84

[a] Shepardson and Hammond (1964)

[b] Shepardson and Hammond (1970)

Source: Data from Shepardson and Hammond (1964:1037; 1970:116)

this table livestock income is estimated for the area by multiplying the "estimated annual return" for an animal by the number of animals. The source of the annual estimates for return per animal is the Division of Resources of the BIA, and the livestock census is provided by the Branch of Land Operations. It is not clear how accurately the estimated annual return per animal represents actual income. If the return is based on the value of an animal sold for meat and shorn for wool, it would yield a gross overestimate of the total livestock income, because no Navajos sell all stock each year nor do they shear every head for market. On the other hand, if the figure represents the average amount received per head, based upon knowledge of the proportion of a flock actually sold or shorn, it may be more accurate. We have not, however, been able to determine how the Bureau of Indian Affairs arrived at this estimate. Navajo Mountain stock income does appear to be atypical when compared with other western Navajo communities and the difference is most likely due to this indirect way of estimating stock income.

Agricultural "products are not sold commercially but may be bartered with neighbors and relatives" (Shepardson and Hammond 1964:1035; 1970:113). Thus commercial and non-commercial sources of "income" for Navajo Mountain are not separated. Furthermore, Shepardson and Hammond (1964:1036; 1970:115) included "free services" (i.e., boarding school maintenance, Public Health Service (PHS) clinics, etc.) as a source of income, claiming that the amount was $124 per person per year following Young's (1961:228) estimate for the Tribe. Shepardson and Hammond's values for income therefore must be considered rough estimates. Table 2.5 shows proportions of income from various

Table 2.5: Income by Source (in percent) at Navajo Mountain Community, 1961-1962

Camps	Livestock	Agriculture	Local Enterprises (such as rug weaving)	Wages	Welfare
1 - 21[a]	48	2.1	1.5	35	13
22 - 46[b]	45	3.5	1.5	23	26
1 - 46[c]	47	2.5	1.5	30	19

[a] Camps studied from 1961 to 1962 and reported by Shepardson and Hammond in 1964

[b] Data for 25 additional camps in Greater Navajo Mountain Community reported in 1970

[c] Total camps studied in 1961-1962 and reported in 1970

Source: Data from Shepardson and Hammond (1964:1037; 1970:116)

Table 2.6: Annual Per Capita Income (Dollars) at Navajo Mountain Community

	Raw Figure	Adjusted (to 1949 dollars)	Less Services	Number of People
1938 all camps	108.23	108.64	108 (?)	135
1961 camps 1 - 21	522.00	408.20	398	323
1961 camps 22 - 46	472.00	?	348	258
1961 camps 1 - 46	500.00	?	376	581

Source: Data from Shepardson and Hammond (1964:1037; 1970:116)

sources (excluding free services). The camps numbered 1-21 in Table 2.5 are those reported by Shepardson and Hammond in 1964, and they are the same camps 1-21 reported by them in 1970. Values for the other 25 camps have been calculated by subtracting the "lesser" community income from the "greater" community income given in Table 2.4.

Table 2.6 summarizes some of the per capita income data for Navajo Mountain Community. By separating the larger community into its components and by comparing components against one another, we begin to see the possibility that there exists some internal inequality within the community. There may be a tendency for camps not in the original kin-connected group studied by Collier to be slightly poorer and to have a slightly smaller camp size (about 10.3 people per camp). The heterogeneity reflected in the economic and demographic data may be a clue to aspects of social organization at Navajo Mountain not dealt with explictly by Shepardson and Hammond. They treated the community as a relatively homogeneous whole.

Collier stated that:

> From Navajo Mountain we have evidence of the function of two units: the hogan and the camp...Cooperation which goes beyond the limits of the camp appears to follow lines of convenience, proximity and fraternal or sororal relationship...From the Navajo Mountain evidence alone it is impossible to make a clear cut definition of the larger community group among the Navajo. We cannot be sure of the relative importance of clan and blood relationships as compared with residence within a limited geographical area. Since the conditions at Navajo Mountain make these factors inseparable and practically coextensive they tend to reinforce each other (Collier 1951:43).

Shepardson and Hammond were mainly interested in the impingement of the larger social system on the "little community" (cf. Redfield 1955) and the modifications it has wrought on the pattern present in Collier's time. They concluded that Rainbow Plateau "has a social structure which is sufficiently flexible to permit the incorporation of new action systems as alternates and supplements" (Shepardson and Hammond 1964:1049). Persistence, they claimed, was more pervasive than was change in this little community.

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3. RED LAKE - WHITE MESA, 1960 and 1966

In 1960, a cooperating group of affinally and consanguinally related camps located in the White Mesa - Red Lake area was studied by Levy, and in 1966, the same individuals were interviewed in conjunction with a Navajo alcohol study. Comparable data were obtained on several variables.

In 1960 there were 7 camps and 19 households with a total population of 104 individuals (40 adults: 22 females, 18 males, and 64 children). The smallest camp, composed of 2 brothers with their families, had 8 people. The largest camp was composed of 4 households and 26 people. Part of one household consisted of a deaf woman with 4 children related only by clan ties. Overall, the households corresponded to the nuclear family and averaged 5.47 people with a range of 3-10. Camp composition was more variable (mean = 14.86 individuals) although matrilocality was predominant.

In 1966, matrilocality was still predominant, and the mean household size had increased from 5.47 persons to 6.3 persons. Camp size had increased from a mean of 14.86 persons to 18, while the number of households per camp had remained almost the same: 2.71 in 1960 and 2.85 in 1966.

By 1966, the number of people, camps, and households in the cooperating group was reduced. One camp which had never been fully integrated into the cooperating group had removed itself to the Kaibeto area. In addition, several households had left. Only 6 camps with 15 households and a total of 87 individuals of the original group remained in the White Mesa - Red Lake area. Most of the outmigration involved shifts to wage work.

In all, however, 7 camps, 20 households, and 126 people were involved in the restudy. These numbers have been used in the calculation of the demographic and economic figures since our purpose here is to present a longitudinal study of families and individuals. Unfortunately, the nature and pattern of cooperation between camps were not a focus of the 1966 study.

The restudy showed that the population had increased by 17.5 percent over 6 years, slightly less than 3 percent per year. However, the number of people remaining in the "outfit" decreased by nearly the same proportion, 16.3 percent.

In 1966, per capita income for the total group, from all sources, was in the neighborhood of $325 per year. This figure represented a 23-percent increase over the estimated figure for 1960 ($250) and a 3.8-percent annual increase in per capita income. This increase is somewhat higher than the inflation rate for the nation (2.9 per year based on the 1960-1970 increase in the consumer price index, or 3.1 percent corrected). The per capita income was insignificantly lower for those 87 individuals remaining in the Red Lake area and for the 116 people remaining on the Reservation. Income from sheep (lamb sales, wool, etc.) was roughly $9,800, and wage income was more than $22,500 (or about $180 per capita per annum). These income figures are very approximate and are underestimates, since a few individuals did not report part-time earnings. About $7,400 came from "welfare" sources, and weaving accounted for some supplementary cash.

It is hard to determine how much of the income actually came into the Red Lake area. About half the wages were earned by individuals who were off the Reservation much of the year, and only about one quarter were earned by people who were definitely full-time participating members of a White Mesa - Red Lake camp.

The difference between 1960 and 1966 for other variables such as education of family heads and age of camp heads is an artifact of the size and nature of the study. Since one group of people is being traced over time, and the time intervals are rather close together, the fluctuation in the sample represents family dynamics rather than a reflection of changes on these dimensions in the western Navajo Reservation. For instance, in 1960, only one of 19 households did not have an adult male within it. For this analysis the household or camp head was taken to be the senior adult male, when present. This procedure was followed to obtain data comparable to the Page area and South Tuba samples. However, it should be noted that senior adult females in at least two cases were much more responsible than were males for camp organization, and could properly be considered camp heads. In 1966, six of 20 households lacked a senior adult male. Increase in the number of female heads of household was due to divorce and death; five deaths had occurred in the community before the end of 1966, and four of these were male household heads. During the period between the surveys, there had been two divorces and one remarriage. Since females tend to have a lower level of education, the drop in average education is probably an artifact of the loss of adult males in the community.

The total number of sheep units represents a legal limit on the amount of livestock that can be grazed in a grazing district. In 1960 an estimated 1,580 sheep units were held by people in the Red Lake area. In 1966 this figure was the same, but some shifts had occurred. Two herds of 100 head each had been taken to Kaibeto. Moves to former winter camp areas were made obligatory by legal restrictions.

Thus, although the Red Lake area residents in 1966 seem to be not very different from those surveyed in 1960 in terms of several demographic variables, several changes have taken place which imply a very different situation for the area in terms of economy and camp composition.

Even though percentages are relatively unchanged, the loss of adults in raw numbers in a group of such size would seemingly have profound implications. One response to loss of personnel may be an increasing shift to wage work by younger males, leading possibly to a further disintegration of camp structures as nuclear family households leave for the centers of the job market.

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4. SHONTO, 1955

Shonto community is an area which apparently relates economically to the trading post at Shonto. The area was studied by A[illegible]s (1963), who was never very explicit about its nature as a "community." It is roughly bounded by Paiute Mesa on the north, the base of Black Mesa and Klethla Valley on the south, Cow Springs Canyon on the west, and Tsegi Canyon on the east, comprising an area of about 230 square miles or 147,200 acres (Adams 1963:52). In 1955, this area was inhabited by 568 individuals living in 100 households; the 100 households in turn could be grouped into 38 residence groups (Adams 1963:52). Furthermore, the 38 residence groups could be assigned to 3 groups based on historical circumstances and provenience (Adams 1963:38).

At Shonto, individuals were grouped into households "comprised basically of nuclear families or remnants thereof" (Adams 1963:55).[1] Seventy-five percent of these households inhabited single dwellings. Adams (1963:55) found that: "The remaining 25 percent of households involve either plural marriages or very large numbers of children, or both." Table 4.1 gives Adams' figures for the sex and age distribution of the Shonto population.

Adams found that the largest group of people, descendants of the earliest settlers, was living in the southwestern part of Shonto community. This group had many contacts with the people living in the vicinity of Navajo Canyon and Inscription House. The second of the 3 groups settled in the Klethla Valley and maintained close associations with people living on top of Black Mesa. The third group had moved south from Oljeto and Navajo Mountain into the northern part of the Shonto area. In 1955, this area of Shonto was still being settled by Navajos from Oljeto and Navajo Mountain (Adams 1963:38-39).

Overall population density in 1955 for the Shonto area was 2.47 persons per square mile, although settlement was more concentrated in the lower elevations to the south (about 4 persons per square mile) than in the north (about 1 person per square mile). Average land area per household was 2.3 square miles (1,472 acres) and 6.05 square miles (3,874 acres) per resident group (Adams 1963:53).

A distinct bimodal distribution of households at Shonto in 1955 is shown by the histogram (Figure 4.1) constructed from Adams' data. Mean household size was 5.68 individuals: 2.79 adults and 2.89 children under 16 (Adams 1963:55).

> Shonto's 100 households cluster in 38 clearly defined territorial units, called residence groups...A residence group comprises one or more closely related households living in close proximity...and sharing certain basic resources in common (Adams 1936:57).

The "residence group" is equivalent to a "camp" following Collier's use of the term.[2] In 1955, there were an average of 2.63 households per camp at Shonto and a range of 1 to 6 households per camp. Five of 7 nuclear camps were of above average household size. The other 2 were "the isolated abodes of persons believed to be witches" (Adams 1963:57-58). The mean camp size was 14.7 individuals with a range of 1 to 29. Adams (1963:59-61) grouped these camps into 12 "resident lineages" which were derived historically from the three major population elements in the Shonto area.

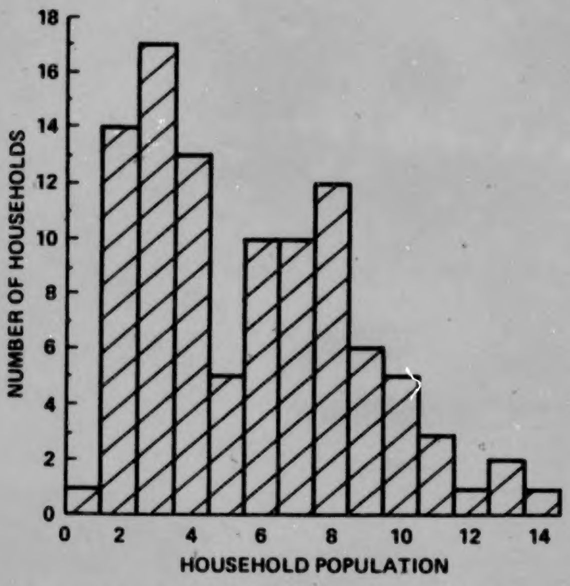

Figure 4.1: Household Size at Shonto, 1955 (after Adams,1963:55, Table 2)

Table 4.1: Sex and Age Distribution of Shonto Residents in 1955

Age Group (years)	Males	Females	Total	Percentage
0-15	140	149	289	50.9
16-25	54	59	113	19.9
26-35	30	28	58	10.2
36-45	21	26	47	8.3
46-55	14	12	26	4.6
56-65	8	7	15	2.6
65+	11	9	20	3.5
Total	278	290	568	100.0

Source: Data from Adams (1963:53)

According to Adams:

> Each resident lineage has developed through the multiplication and expansion of an original preempting family within the community, such that each has its own district, contiguous territory. The incidental consequence of this historical development is that resident lineages tend to fulfill within themselves both of the two principal conditions necessary to Navaho social interaction: geographic and consanguineal proximity. A high degree of internal interaction inevitably results (Adams 1963:60).

Adams showed little evidence of "resident lineages" being lineal; he found that "Shonto's resident lineages may include the households of siblings of either sex plus their married children and grandchildren of either sex" (Adams 1963:60). The resident lineages were seemingly consanguineal but not unilineal. Furthermore, five resident lineages were isomorphic with the camp, and three resident lineages were composed of only 2 or 3 households (Adams 1963:60). Residence patterns for households are given in Table 4.2 from Adams (1963:64).

The predominance of matrilocality was not marked (only 52 percent), and in one area patrilocality was the statistical norm. It should be noted that these households were typed according to relationship to the *resident lineage*, *not the camp*. For the 31 camps with more than a single household, 19 were bilocal (both patrilocal and matrilocal units), 8 matrilocal, 3 patrilocal, and 1 neolocal.[3] Adams' basis for classification was land tenure, which does not necessarily represent relationships between households in the same camp. The connections between

Table 4.2: Residence Patterns for Shonto Households by Area of "Resident Lineage" and Number of Years Household Established

Area	Matrilocal	Patrilocal	Neolocal	Uncertain
Southeast Group				
0 - 10 years	9	5	--	--
10 - 20 years	9	5	--	--
20 or more years	13	8	--	--
Total	31	18	--	--
Southwest Group				
0 - 10 years	6	1	--	--
10 - 20 years	5	3	--	--
20 or more years	2	7	--	--
Total	13	11	--	--
North Group				
0 - 10 years	3	5	--	--
10 - 20 years	1	3	--	--
20 or more years	4	5	--	--
Total	8	13	--	--
Shonto School			3	
Grand Total	52	42	3	3

Source: Data from Adams (1963:64)

the head of a household and the head of a camp, for instance, may be obscured by Adams' use of terms. These data indicate that resident "lineages" are not unilineal (and certainly not matrilineal, even though the Navajo are considered to have a matrilineal system). The "resident lineage" pattern that Adams introduced appears to show that the reckoning of descent has little to do with the actual organization of social (or, at least, residence) groups.

Adams concluded that "The region north and west of Black Mesa is, after all, the most recently settled of the entire Navajo country and for this reason alone should hardly be expected to have the most traditional culture and society" (Adams 1958:69).

Adams' method which classifies households as matrilocal, patrilocal, or neolocal is so idiosyncratic that his data cannot easily be compared with any other Navajo community study. His report does not reveal the camp or residential group organization or post-nuptial residence patterns. While it may represent the nature of consanguineal ties in fairly large geographic areas and thus may promote understanding of settlement patterns, the use of terms generally denoting post-nuptial residence can only confuse the issue. The use of the term household to include families living under more than one roof is also confusing and makes it difficult to compare the Adams data with other studies.

The mean area occupied by a "resident lineage" was 12,267 acres; most areas were apparently smaller, while a lesser number were larger. This mean area was smaller than the 15,000 acres (minimum) of the "land-use communities" described by Kimball and Provinse (1942:23) for the Piñon - Black Mesa area.

Within the Shonto area there were several dominant clan segments. Table 4.3 shows the distribution of the Shonto population by clan affiliation. In 1955, members of at least 13 clans were resident in the Shonto area. A generation before only the first 6 clans and Kinlichi'ini were present. Reed Clan was localized in the Cow Springs - Shonto - Black Mesa area (Adams 1963:61-62; Levy 1962c:784-785). Salt Clan was the most prominent clan at Navajo Mountain along with Bitter Water. The Many Goats and Edgewater Clans were prevalent on the Kaibeto Plateau (Levy 1962c:784-785). The number of clans represented is essentially consistent with other western Navajo communities (e.g., Navajo Mountain Community).

Adams' major emphasis at Shonto was economics. From informants, trading post records, and documents from other agencies, Adams collected data on income for the 100 households in the study. While the mean annual incomes were $291 per capita, $1,656 per household, and $4,357 per camp, Adams felt these figures were somewhat misleading, suggesting that "The community's mean household income should probably be figured at somewhere between $2,000 and $2,500 for comparison with non-Indian communities" (Adams 1963:140). The purpose of this adjustment was to take into account free services available to members of Shonto community. Adams (1963:139-140) also believed that the figures for household income were misleading because resources were pooled within the camp.

Table 4.4 summarizes the salient economic data. Products consumed at home represented 10 percent of all income. The figure for home consumption is rather an arbitrary one and was calculated by Adams from estimates of the average weight of lambs not sold, market values of lambs, and the average dollar yield per acre (Adams 1963:122-124). Home consumption, so estimated, accounted for nearly half of all income from "native enterprises." Wage work accounted for 55.7 percent of all income, most of which came from railroad work and other off-Reservation sources. Welfare, unemployment compensation, and other unearned income contributed 22.4 percent of the community's income. Eighty-three percent of all households and all camps depended in part on livestock or other "native enterprises." Sixty-six percent of all households and all but 3 camps depended partly on wages. Seventeen households received welfare and 42 others unemployment compensation.

Adams' economic data are as detailed and extensive as any economic data on the Navajo. From these data emerges a fine exposition of economic pattern of this area of the Reservation in the mid-1950s. Of special interest are the multiple sources of income of most camps and the pervasiveness, among males, of off-Reservation seasonal wage work on the railroads.

Table 4.3: Clan Membership at Shonto

Clan	Individuals
Lokadine (Reed)	158
Todichiini (Bitter Water)	118
Tlizitani (Many Goats)	77
Ashikini (Salt)	74
Tabaha (Edgewater)	49
Tachiini (Red Streak)	28
Adootsosni (Narrow Gorge)	18
Bitani (Folded Arms)	10
Deschiini (Red Rock Bend)	6
Honagha (He Walks Around)	2
Kinlichi'ini (Red House)	1
Tsinajini (Black Rock)	1
Hashgha'atso (Yucca Fruit Is Strung Out)	1
Unknown	25
Total	568

Source: Data from Adams (1963:62)

This was certainly the most important source of cash in the community.

Although Adams provided detailed economic information, one must be cautious in using his data for comparative purposes. Adams tended to assume that the Shonto Navajo both bought and sold exclusively at Shonto trading post; this assumption allowed him to rely upon trading post records for estimates of income derived from lamb and wool sales. While reliance on Shonto trading post was certainly more true in the past than at present, Shonto Navajo did not use it exclusively in the 1950s. Many Reed clansmen spent a good part of the year near Cow Springs trading post where wool sales were frequently conducted. There was, even then, a tendency for Navajos to sell a proportion of their goods to traders at posts where they did not have credit, in order to obtain some cash payments. Therefore, Adams probably underestimated the extent of livestock transactions. Ruffing's restudy of Shonto in 1971, discussed in Section 5, apparently used Shonto trading post records rather than interviews with Navajos. Because both studies were based on Shonto trading post records, Shonto appears less reliant upon livestock than do other western Navajo communities studied between the 1950s and 1970s. In spite of the underestimates of livestock activity, the strength of both Adams' and Ruffing's studies of Shonto is in the wealth of detail presented, which allows the reader to recombine data for comparative purposes in a number of different ways.

Table 4.4: Sources of Income at Shonto in 1955

Source	Total Community Income
Native Enterprises	
Wool sales	$ 6,171
Lamb sales	6,280
Home consumption, livestock	14,639
Home consumption, agriculture	2,120
Crafts	2,685
Miscellaneous native enterprises	4,525
Total native enterprises	$36,420
Wage Work	
Local payrolls	$20,324
Railroad wages	67,964
Nonrailroad wages	3,750
Total wage work	$92,038
Unearned Income	
Unemployment compensation	$17,815
Welfare	13,598
Other outside income	5,680
Total unearned income	$37,093
Total income from all sources	$165,551
Mean per capita income (N = 568)	$291

Source: Data from Adams (1963:138)

Footnotes:

[1] "A household comprises the people who inhabit a single hogan - or in some cases two or more hogans within a few yards of each other - and who eat regularly together and share resources in common" (Adams 1958:64)

[2] "The hogans constituting a single residence group are seldom more than a couple of hundred yards apart, whereas they are always at least half a mile, and more commonly over a mile, from those of neighboring residence groups" (Adams 1958:65).

To facilitate comparison of data in this Bulletin, we try to use a single term, "camps," in the text (following Collier's definition of this unit of Navajo social organization). Various authors use different terms to refer to this unit, although the unit itself is defined in virtually the same way by most authors.

[3] "The trend has been toward matrilocalism in recent years" (Adams 1958:68).

References:

Adams, William Y.

1958 "New Data on Navajo Social Organization." Plateau 30:64-70.

1963 Shonto: A Study of the Role of the Trader in a Modern Navaho Community. Bureau of American Ethnology, Bulletin 188.

5. SHONTO, 1971

The Shonto community, first studied by Adams in 1955, was restudied by Ruffing in 1971. Her restudy emphasized economic variables, but some other important information was also collected.

In the intervening 16 years, the population had grown from 568 to 792 people, an increase of 39.4 percent, representing an average annual increase of 2.1 percent which is seemingly low for a Navajo population. The expansion increased population density to 3.44 persons per square mile, about 40 percent denser than in 1955. By 1971, there were 60 camps or residence groups, an increase of 58 percent over the 38 groups reported by Adams in 1955. The number of households had increased by 28 percent, to a total of 128 in 1971. These figures reflected a fissioning of camps which meant that "each residence group land-use area had shrunk to 3.8 square miles or 2,453 acres, a drop of 36.6% from 1955" (Ruffing 1972:123).

The increase in population was reflected by an increase in the average household size from 5.68 to 6.18 persons. However, the 16-year period showed a slight trend toward smaller camps. The number of households per camp fell from a mean of 2.63 to a mean of 2.18 (see Table 5.1).

Assuming that the samples studied by Adams and Ruffing were independent (actually they were not), we applied a t-test to their data. The test revealed no statistically significant difference in camp size over the 16-year period. Even so, there are a variety of factors which suggest changes in social organization: (1) camps fission more rapidly than new households are created; (2) there is more variation in camp size and an increasing pressure on the land; and (3) there is a strong possibility that the real growth rate is deflated by emigration. The third possibility can be checked in a rough way by a comparison of the age and sex distributions in 1955 and 1971, but unfortunately the necessary data are not available for 1971. Ruffing did not discuss residence patterns or camp and household composition to help illuminate the nature of social organization. Since Ruffing had access to Adams' material and mainly used his definitions of household and residence group, any biases she might have had in defining camps were probably similar to those of Adams. Therefore, the

Table 5.1: Changing Camp Size at Shonto, 1955-1971

	N	Mean	Standard Deviation	Range	Z Score
1955	37	14.95	6.14	2-33	0.73, no significant difference
1971	60	13.20	6.85	2-36	

Source: Data from Ruffing (1972:124-125) and Adams (1963:112-116) differences in camp size reported by Ruffing and Adams are not assumed to be due to author bias in defining camps.

Table 5.2 shows changes in source and amount of income by a comparison of 1955 and 1971 figures. There are some discrepancies between Ruffing's figures for 1955 and Adams' published data for the same year. In particular, Ruffing inflated the amount derived from "traditional" sources, livestock, agriculture, and crafts. She also included a new category, "welfare in kind" (non-cash forms of welfare such as food or equipment), which was not used by Adams. Most (86 percent) of the "income" within this category was supplied by commodity foods. Both Ruffing and Adams included home consumption of livestock and agriculture in their figures (Ruffing 1972:230-233).

Table 5.3 displays sheep income by type and shows that it is questionable whether there was an increase in income from this source in the period between the two studies. The Table indicates that if subsidies had not offset the effects of a collapsed wool market, there would have been little gain in cash income from sheep. There was apparently no real increase even though the area was 113 percent overgrazed in 1971 as compared to its having been 25 percent overgrazed in 1955. In 16 years, the average flock size had declined from 93 to 83, but by contrast, cattle herds had increased in size from an average of 7.03 head in 1955 to 18.3. In 1971, there were 735 cattle, 2,899 goats, 4,995 sheep, or 10,834 sheep units at Shonto. Thirty-nine camps had cattle, and all had sheep. Furthermore, 51 camps each had at least one small cornfield. In spite of this agricultural activity, only about 4 percent of total income can be attributed to home consumption in 1971 compared to 10 percent in 1955.

There has also been a lessening dependence on "traditional" enterprises and railroad income. The loss of income has been more than offset by a dramatic rise in welfare payments and local wage work. But even this statement needs to be qualified. The shift from railroad work to local wage work is a shift in the pattern of wage work, not in its relative importance. In fact, wage work as a whole accounted for a somewhat smaller proportion of the total community income in 1971 (59.5 percent) than it did in 1955 (64.5 percent). The BIA school, built since 1955, employed 133 local Navajos and accounted for 31.4 percent of the total community income in 1971.

Ruffing concluded: (1) "the livestock economy declined in physical productivity"; (2) "the most striking change was the increase in local permanent and temporary wage work opportunities"; and (3) there was a "shift of surplus labor out of subsistence activities into wage work." She could have perhaps stressed more strongly the increase in welfare payments. She merely stated that "The growth of welfare payments does not signify increasing need, but rather that the people are more adept at obtaining welfare to meet their needs" (Ruffing 1972:162-164).

Ruffing's cursory treatment of welfare is an unfortunate oversight in an otherwise fine study. It is based implicitly on Ruffing's belief in the homogeneity of Shonto as a community and on an overemphasis on the extent of cooperation

Table 5.2: Changes in Income by Source and Amount at Shonto, 1955 - 1971

	Amount						Change	
Source	1955^{a}	Percent	Rank	1971	Percent	Rank	Percentage of Whole	Percentage Change in Income (1955 Dollars)
Livestock	$ 31,405	18.3	2nd	$ 58,018	10.1	4th	- 8.2	+ 30.1
Agriculture	8,600	5.0	5th	6,319	1.1	7th	- 3.9	- 48.3
Weaving, Singing	6,360	3.2	6th	13,566	2.3	6th	- 0.9	+ 50.2
Local Wage Work	22,624	13.2	3rd	248,141	44.4	1st	+31.2	+659.1
Railroad Wages and Compensation	85,779	50.1	1st	83,735	14.5	3rd	-35.6	- 31.7
Non-local Wage	2,800	1.6	7th	3,552	0.6	8th	- 1.0	- 10.7
Welfare (cash)	13,598	7.9	4th	124,881	21.7	2nd	+13.8	+546.7
Welfare (kind)	---	---	-	28,728	4.9	5th	+ 4.9	?
Total	$171,166	99.8		$574,080^{b}	99.9			+136.2
Per Capita Income	$301^{a}			$689^{c}				+ 66.1

[a] Ruffing's figures for 1955 differ slightly from Adams' (1963:138) published figures. Adams' per capita figure was $291.

[b] Total equal to $404,281 in 1955 dollars (a real increase of 136%).

[c] Excludes welfare in kind; Ruffing's (1972:4) figure is $725 (or in 1955 dollars, $510).

Source: Data from Ruffing (1972:162)

between non-related groups within the Shonto area. She stated that "a program for promoting an increase in income per capita based on cooperatives would be more consistent with southwestern Indian social structures..." (Ruffing 1972:21). "If the residence group is communal in nature, it seems logical to extend its economic activities through cooperatives..." (Ruffing 1972:35). This view of Navajo social organization and values may account for a lack of concern about economic stratification and hence a de-emphasis of the importance of welfare.

There are, however, some indications that social stratification exists in Shonto and, to a lesser degree, that stratification is associated with welfare. In 1955, 17 households in 14 camps received welfare. The per capita annual income for households receiving welfare was $242, and for camps was $255. These figures are well below the community figure of $291 (see Adams 1963:114-116).

Table 5.3: Sheep Income at Shonto

	1955	1971
Home consumption	$14,639	$15,124
Wool saved	?	4,433
Total consumed	14,639	19,557
Wool sales	6,171	7,221
Lamb sales	6,280	4,892
Subsidy	?	8,700
Total cash income	12,451	20,813
Grand Total	$27,090	$40,370

Source: Data from Adams (1963:138) and Ruffing (1972:130)

Adams (1963:143) also noted a heavy increase in Aid to Dependent Children payments during the summer months when children returned from boarding school and many men were off on railroad gangs. Even Ruffing's 1971 data on total livestock income and livestock holdings indicated that 6 camps with 14 percent of the population received 32.4 percent of the livestock income (see Tables 5.4 and 5.5). These data do not suggest that the community is firmly stratified. The 6 camps were not very wealthy in 1955, and other camps may have supplemented their income from other sources. There is no information on supplementary income since Ruffing did not break down income derived from wages and welfare by camp. However, she did give an idea of the variation in economic strategies, stating that:

> Every residence group continued to engage in subsistence activities. Thirty-six residence groups engaged in some combination of subsistence activities, local wage work, and welfare. Another 24 engaged in non-local wage work either on the railroad, in agriculture, or construction. The most frequent combinations were subsistence activities, temporary wage work, and welfare (10 Residence Groups) or subsistence activities and temporary wage work (7 Residence Groups) or subsistence activities, temporary wage work, permanent wage work, and welfare (8 Residence Groups) (Ruffing 1972:158).

Finally, it might be noted that without welfare the 1971 per capita income was only $531 per year (equal to $374 in 1955 dollars, i.e., representing a real rise of 24 percent from 1955 to 1971). As Adams (1963:147) has shown, in 1955 the Shonto Navajo per capita and mean household income was only 65 percent that of the average value for the Navajo Tribe as a whole. Yet Shonto relied slightly more on welfare than did Navajos in general.

The sad fact seems to be that welfare is vital in the Shonto community and that its increase in the 16 years from 1955 to 1971 is a reflection of real need in a number of families.

Conclusions

Since 1955 a number of changes have taken place at Shonto which have affected the economic structure and social organization of the community. The chapter unit which includes Shonto and Cow Springs has become a more important political entity, a school has been built, and transportation and communication have been improved. The area experienced a severe drought in 1971.

During this period population rose rapidly, though not as much as in some other areas of the Reservation. Although household size increased, camps fissioned even more rapidly, causing a decline in camp sizes.

The creation of a local source of wage work replaced migratory railroad work to some degree. At the same time, while reliance on subsistence activities was lessened, every camp continued to maintain some sheep and most possessed other livestock as well. Aside from local wage work (about 19 percent of which was supplied directly by the Navajo Tribe and was mostly temporary), welfare provided the largest increment in the community's income. Shonto had shifted its economic and social base towards a wage-welfare economy, largely, it seems, as a response to population pressure on the land base.

Table 5.4: Distribution of Sheep among Camps at Shonto in 1971

Number of Sheep Per Camp	Camps
1-24	5
25-37	7
38-50	16
51-100	14
101-150	10
151-200	3
201-300	4
300+	1
Total	60

Source: Data from Ruffing (1972:131-132)

Table 5.5: Distribution of Livestock Income among Camps at Shonto in 1971

Income Range (Dollars)	Frequency (Number of Camps)
0-200	4
201-500	19
501-1000	14
1001-1500	9
1501-2000	7
2001-2500	5
2501-3000	1
3000-4500	0
4500+	1

Source: Data from Ruffing (1972:144-145)

References:

Adams, William Y.

1963 Shonto: A Study of the Trader in a Modern Navajo Community. Bureau of American Ethnology Bulletin 188. Washington: U.S. Government Printing Office.

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6. BLACK MESA, 1971

In the autumn of 1971, Kozlowski interviewed 25 household heads or their spouses on Black Mesa. The area surveyed was largely west of the Peabody Coal Company strip mine and extended to near Cow Springs. The 25 households about which Kozlowski gathered some information constituted an "availability sample" of households in the area (Kozlowski in press:4-5). Kozlowski defined a household as those persons who reside under one roof and who also share resources. The average household size was about 5.7 persons with about 3 children and more than 2 adults. Of the 76 children in the sample almost three-quarters (and 88 percent of the 62 children in school) were away at boarding school. Thus the average household had only about 3.7 members in residence all year long (Kozlowski in press:5-6).

Kozlowski obtained information on the age and education attainment of household heads and their spouses. Household heads were generally elderly. The average age of household heads was 59 years and 13 of 24 household heads were over 60 years old. The educational attainment of 42 household heads and spouses was very low, 86 percent had no formal schooling, and only one had more than an elementary school education (Kozlowski in press:Tables 3, 4). Certainly the age of this sample is partly the reason for the low level of educational attainment.

The 25 households were of varying composition. Independent nuclear households and varieties of this basic type (conjugal pair and grandparent-grandchild households) accounted for 72 percent of all households and about 58 percent of the survey population. The remainder of the population lived in extended or joint family households.

Table 6.1 shows the estimated gross income from different sources for the 23 households that provided reliable information. The mean household income was $2,130 per year, and a per capita annual income (for 130 people) was $380. Welfare was by far the most important source of income in most households. Eighteen households received some unearned income. Livestock was owned by all households and was a more significant source of income for a greater number of households than were wages. While only 15 households sold sheep, all but one household consumed part of their herd. The 15 households who sold sheep (63 percent of all households) owned 76 percent of sheep in the sample (Kozlowski in press:Table 8) which indicates some differentiation in the area based on livestock data for the sample. Table 6.2 presents some of the basic livestock data for the sample. The average cash income from livestock was about $260 per household. However, not all livestock-holding households received cash income. Furthermore, overgrazing coupled with drought meant that the range was inadequate. Supplementary feed for stock, beyond that issued by the Navajo Tribe, had to be purchased. Kozlowski (in press: 14) estimated that households spent about $3,375 for feed. This figure is slightly over half of the gross cash income derived from livestock and about a quarter of the estimated value of livestock combining cash income with home consumption. The net income from livestock was quite small since a large amount of money had to be spent for feed. On the other hand, sheep and goats were slaughtered for home consumption, and can be considered as a non-monetary income supplement. In general, livestock-raising appears to have been a precarious activity offering little more than partial subsistence for most households. Thus while nearly every household had some benefit from livestock, only 6 households, at the most, received support from wage earners. There were 6 wage earners in the sample, but only one, an employee of Peabody Coal Company, had a full-time job. This individual's wages ($10,000 per year) accounted for 65 percent of all wage income in the area (Kozlowski in press:11-12).

Wage work may have been more significant for households than Table 6.1 suggests. Kozlowski (in press:6) noted the age of household heads was relatively high and that at least one-third of the non-resident adult male offspring of Black Mesa household heads were living off the Navajo Reservation. Another 3 adult males were in Tuba City (Kozlowski in press:Table 5). It is possible that some of these men may have contributed to a small degree to the economic welfare of their parents' household. Since Kozlowski did not report on this possible source of income, such an inference is purely speculative. Craft income was a minor element in Black Mesa's economy, although only six households did not derive any benefit from the source. All but two of those engaged in craftwork did weaving.

Kozlowski's paper focused on economic conditions and provides only a small amount of data on social organization. He

Table 6.1: Estimated Income From All Sources On Black Mesa, 1971

Source of Income	Amount	Percent of Total Income	Percent of Income (less home consumption)
Welfare	$25,200	46	51
Wage	15,500	28	32
Livestock	12,415	22	
(Cash)	(6,235)		13
(Home Consumption)	(6,180)		
Crafts	2,125	4	4
Total	$55,185	100	100

Source: Data from Kozlowski (in press: Tables 6, 10; footnote 8)

Table 6.2: Livestock Ownership and Income on Black Mesa

A) Livestock Ownership	Total Number of Head Owned	Range	Mean Number Owned per Household with Stock	Households with Stock	Total Sheep Units Represented	Mean Number of Sheep Units per All Households
Sheep and Goats	2,187	16-320	91	24	2,187	91
Cattle	96	3-46	12	8	384	16
Horses	74	1-7	3.5	21	370	15
Total	2,357	---	---		2,941	123

B) Income from Livestock	Cash Received (Dollars)	Amount Sold (Dollars)
Sheep and Goats	---	471
Home Consumed	3,035	229
Lambs	1,925	---
Wool	1,275	10
Cattle		
Total	6,235	---

Source: Data from Kozlowski (in press:14, 15; Tables 7, 10) initially had a high refusal rate (Kozlowski in press:4) on Black Mesa, and it is uncertain to what extent his economic and household data for the area were biased by problems encountered in sampling. The economic condition revealed by Kozlowski is bleak. Over 90 percent of the households were below the poverty level and indebtedness was common as households needed credit to meet routine expenses. Black Mesa would seem to be one of the poorest areas of the Reservation. Our survey of an adjacent area on Black Mesa two years later showed an estimated per capita income of over $1,000. Kozlowski's figures for Black Mesa are lower than those for Shonto and Red Lake.

Reference:
Kozlowski, Edwin
In Press. "Subsistence on Black Mesa." In Contemporary Indian Reservation Society, Joseph G. Jorgensen, ed.

7. SOUTH TUBA CITY, 1960, 1966

In 1960 a survey of 45 camps, 40 of which were to be included in a new water project, was made in South Tuba City. Camp information from this survey included composition, number of households, number of individuals, and certain facts about the person designated as camp head - age, sex, education, occupation, etc. From these camps a random sample of 13 camps was drawn to obtain more detailed information. The similar values for a number of variables displayed in Table 7.1 show that the random "sub-sample" is an adequate reflection of the total population.

Since the figures for occupations match closely, as do the other parameters, we may have confidence in the economic data for South Tuba in 1960. The occupation, in most cases, reflects the major source of income. However, the figures given for South Tuba, like those for Red Lake, must be considered approximate with respect to economic variables. In addition, 17 individuals (4 percent of the community) considered as "people in the camp working out of town," probably added some to the income of the camps. Nine camps, whose major emphasis was not sheep, nevertheless maintained flocks in areas around Tuba, and as distant as Cedar Ridge, Howell Mesa, and Grey Mountain. This would seem to support the existence of at least some participation in the pastoral communities adjacent to Tuba City.

Table 7.2 gives some idea of the relationship of education to occupation for 43 camp heads. The sample is really too small to be subjected meaningfully to statistical tests, but some tendencies are clearly evident. In general, those people with more years of education have the more stable and more lucrative jobs.

In 1966, the sample selected in 1960 was restudied as part of the Navajo alcohol study. Limitations inherent in following the same group of people through time have been noted with reference to the Red Lake sample. The population growth represented by those camps recontacted (all but 2 - one in which the family moved and another single elderly male who had died) was about 1.6 percent per year. Annual per capita income had increased at a rate of 2 percent, somewhat less than both the Red Lake sample (3.8 percent) and the national rate of inflation (3 percent).

A comparison of some demographic variables shows that the changes can be most easily explained with respect to family dynamics and may not be a true reflection of the total community in the way that the random sample was in 1960 (see Table 7.3). One camp accounted for a large number of the changes. The camp expanded from 17 to 30 individuals and from 3 to 5 households. This is one of the largest camps noted on the western end of the Reservation. Average education and income were reaching a point at which the camp would be expected to fission. Each household in the camp was

Table 7.1: Comparison of South Tuba City Total Sample with Random Sub-Sample, 1960

	Total Sample		Sub-sample	
	Number	Percent	Number	Percent
Number of individuals	426		105	
Camps	45		13	
Households	63		19	
Households per camp	1.40		1.46	
Persons per household	6.76		5.53	
Persons per camp	9.47		8.08	
Mean years of age for camp heads	44.70		43.50	
Mean years of education for camp heads	5.80		6.15	
Female camp heads	16	35.5	3	23.0
Occupations of camp heads				
Housewife	11	25.0	3	23.1
Government-supported job	10	22.7	3	23.1
Welfare	6	13.5	2	15.4
Wage (non-government)	5	11.4	2	15.4
Unemployed	4	9.1	2	15.4
Sheep-herding	5	11.4	1	7.7
Retired	2	4.5	0	0.0
Medicine Man	1	2.3	0	0.0
Total Number of Individuals with Occupations	44	100.0	13	100.0
Non-Indian	1		0	

Source: Derived from Levy (1960-1966 Field Notes) economically independent with respect to source of income. By contrast, only minor changes had taken place in other camps.

Nevertheless, because the Red Lake and South Tuba populations were studied at the same times and in the same manner it is worth noting that household size, camp size, and number of households per camp have all increased in both communities over time. Whether these results were an artifact of restudying the same households after 6 years or whether they truly reflected a trend in the general population cannot be determined without further research.

References:

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Levy, Jerrold E., and Stephen J. Kunitz
1974 Indian Drinking: Navajo Practices and Anglo-American Theories. New York: John Wiley and Sons.

Table 7.2: Years of Formal Education for Camp Heads with Various Occupations in South Tuba City, 1960[a]

	Years of Formal Education						
Occupation	0	1-5	6-8	9-11	12	13	Mean
Government job	-	-	-	3 (1)	5 (2)	2	11.6
Wage (non-government)	2 (1)	-	-	2 (1)	1	-	6.6
Housewife	5 (2)	1	1	3 (1)	1	1	5.0
Unemployed	1 (1)	1 (1)	2	-	-	-	4.8
Welfare	1	3	2 (2)	-	-	-	3.3
Retired	2	-	-	-	-	-	0
Sheep-herding	5 (1)	-	-	-	-	-	0

[a] Figures in parentheses are those for the random sub-sample of 13 camps

Source: Derived from Levy (1960-1966 Field Notes)

Table 7.3: Demographic Changes in South Tuba City, 1960 - 1966

	1960	1966
Population	105	115
Number of camps	13	11
Number of households	19	18
Households per camp	1.46	1.64
Persons per camp	8.08	10.45
Persons per household	5.53	6.39
Years education of family head	6.4	6.7
Mean age of family head (years)	42.5	41.6

Source: Derived from Levy (1960-1966 Field Notes)

III. EASTERN NAVAJO

8. KLAGETOH, 1939

Collier (1951) followed a research design similar to that used by Aberle (1966), that of comparing two Navajo communities which seemed to differ in respect to proximity to or isolation from the surrounding Anglo world. Navajo Mountain was Collier's "traditional," isolated community. Klagetoh, like Mexican Springs, was characterized by greater proximity to services and Anglo centers. Klagetoh was 28 miles from U.S. Highway 66 and 30 miles from Window Rock; it was a Soil Conservation Service headquarters, the center for a day school, and a community meeting house. In addition, the complex at Klagetoh also included a trading post. Collier's sample consisted of 227 individuals who lived within 3 miles of this complex and "their interests centered primarily in school, meeting and store at Klagetoh" (Collier 1951:47).

Klagetoh was apparently settled before the 1860s but was depopulated when the inhabitants were taken to Fort Sumner. It was resettled by the 1870s. The density of settlement in the approximately 30 square miles surrounding the center surveyed by Collier apparently was a little more than 7.5 persons per square mile, which was quite a bit greater than the figure of 2.4 persons per square mile for District 17 reported in the 1940 Human Dependency Survey. However, the density figure 7.5 represents the settlement area and does not include all pasture and farming areas (Collier 1951:44-45).

Table 8.1 gives a breakdown of the people by the units of social organization which Collier found at Klagetoh. Collier stated:

Table 8.1: The Size of Cooperating Groups, Camps, and Hogans at Klagetoh in 1939

Cooperating Group	Number of People in Group	Camp	Number of People in Camp	Hogan	Number of People in Hogan
I	33	1	5	-	-
		2	16	a	12
				b	3
				c	1
		3	12	-	-
II	17	1	4	-	-
		2	5	-	-
		3	8	-	-
III	26	1	10	-	-
		2	3	-	-
		3	6	-	-
		4	1	-	-
		5	6	-	-
IV	5	1	3	-	-
		2	2	-	-
V	34	1	9	a	4
				b	5
		2	15	a	13
				b	2
		3	10	a	6
				b	4
VI	8	-	-	-	-
VII	29	1	6	-	-
		2	2	-	-
		3	21	a	4
				b	7
				c	5
				d	5
VIII	11	-	-	-	-
IX	16	1	5	-	-
		2	11	a	5
				b	6
X	16	1	3	-	-
		2	7	a	1
				b	6
		3	6	-	-
XI	7	-	-	-	-
XII	25	1	10	a	5
				b	5
		2	5	-	-
		3	8	-	-
		4	2	-	-

Source: Data from Collier (1951:54-55)

> The groups that do emerge at Klagetoh as functioning units are the hogan, the camp and the cooperating-group. Hauling wood and water are centered in the camp. Preparing and eating of meals is usually done in each hogan although cooked food may be shared within the camp. Herding and farming present additional manpower requirements, which are supplied by combination into cooperating-groups. The camps that combine for herding may recombine with different camps for farming. Sometimes the same combination carries on both activities. Each larger group, consisting of the camps cooperating for herding and farming activities, constitutes a territorial unit (Collier 1951:64).

Table 8.2 gives some means and ranges for the number of people in each of these units. The mean of 7.3 people per camp closely approximates the average consumption group size (7.0 people) found in 1936 by the Soil Conservation Service Survey.

It is interesting to note that "these Klageton people remain in the same hogans the year round" (Collier 1951:53). Beyond this fact it is difficult to see a clear pattern in Klagetoh's social organization. Flexibility seems to be the hallmark and definitions become somewhat obscure. Collier stated:

> Local herding, farming, and ceremonial procedures bring several camps together into larger units called, in this study, cooperating-groups. The camps within a cooperating group are closely interrelated by kinship and marriage and live within about half a mile of each other (Collier 1951:53).

Thus in many ways Collier's "cooperating group" is similar to the "camp" - a territorial or coresidential unit connected by kin ties and cooperation. Indeed, Kluckhohn and Leighton (1946:63) reported only two social units at Klagetoh, but the source of their data is not clear:

> At Klagetoh in 1939 there were 233 people living in 29 hogans. All but four of these families combined in various ways to make up eight or nine extended families. There was some cooperative work between any two or more of these extended families at the busy seasons (Kluckhohn and Leighton 1946:63).

These data probably came from Collier's field work although the figures are not precisely the same as those in Collier's dissertation. This is the only instance Kluckhohn and Leighton mentioned Klagetoh, so the source of data remains ambiguous. They also may have confused Collier's multi-hogan camp with a single hogan unit. The situation at Klagetoh was further complicated by the fact that "there are some occasions when a few of the people from one cooperating group work with the people in another cooperating group" (Collier 1951:57). Collier reported that one-third of the cooperating groups at Klagetoh were composed of a single matriline whereas the other two-thirds were essentially composed "of several lineages of about equal size interrelated through marriage" (Collier

Table 8.2: Mean Size of Hogans, Camps, and Cooperating Groups at Klagetoh in 1939

	Mean	Range	Number
Persons per hogan	5.4	1-13	227 people
Hogans per camp	1.4	1-4	42 hogans
Persons per camp	7.3	1-21	31 camps
Camps per cooperating group	2.6	1-5	12 cooperating groups
Persons per cooperating group	18.9	5-34	

Source: Data from Collier (1951:54-55)

1951:68). Collier gave the incidence of patrilocal residence as 30 percent in one statement (Collier 1951:68) but it is not clear what group served as the residential unit. However, according to kinship diagrams mapped onto households, it appears that only 3 of the 42 households lived patrilocally in camps, whereas 7 households were matrilocal and about 20 of the households constituted nuclear family camps. The remainder of the households were organized in a variety of other ways (Collier 1951:48-49, Figure 4). Table 8.3 gives some idea of the extent of clan localization. Only 5 clans accounted for two-thirds of all adult clan members.

Collier provided little economic data. Per capita income was given as $136.08 in the Klagetoh area and seems to have been taken from a separate survey carried out by the Soil Conservation Service (Collier 1951:85).

Collier did not break down flocks by sheep units nor farms by acres, but one

Table 8.3: Clan Membership of Adults at Klagetoh

Clan	Women	Men	Total
Cituazini (Black Rock)	10	9	19
Bitani (Folded Arms)	8	4	12
Hanagani (He Walks Around)	6	3	9
Cenzakin (Black House)	4	5	9
Kiya'ani (Standing House)	5	3	8
Asihi (Salt)	3	3	6
Tabaha (Edgewater)	4	1	5
Dihełizini (Black Sheep)	4	1	5
Todecini (Bitter Water)	4	0	4
Toconi (Big Water)	1	2	3
Tacini (Red Streak)	1	1	2
Taneszani (Hogan on Rock)	0	2	2
Kinłichi (Red House)	0	1	1
Descini (Red Rock Bend)	1	0	1
Total	51	35	86

Source: Data from Collier (1951:52)

can get an impression of the subsistence pattern from the following facts taken from her Appendices 11 and 12:

cooperating groups with:

one flock	5
two flocks	3
three flocks	3
pool sheep with another group	1
one field	6
two fields	4
three fields	2

Wage work seems to have been relatively unimportant, at least within the community. Fourteen men worked at some time during the period of study: 5 for affinals, 5 for clan relatives, and 4 for unrelated persons (Collier 1951: Appendix 15).

Comparing Klagetoh to Navajo Mountain, Collier thought that the latter community was one large "expanded cooperating-group." She inferred that this was a more traditional unit and that it reflected a more traditional pattern of Navajo life. Klagetoh represented a more modern type of community, a result of Anglo contact. She concluded that,

> the evidence suggests that the expanded cooperating-group found at Navajo Mountain represents the survival of an early form which elsewhere has vanished with time and with proximity to outside contact (Collier 1951:71).

Perhaps the extremes between Klagetoh and Navajo Mountain and perhaps, also, an overestimate of "influence" of Anglo contact in Klagetoh patterns of social organization obscured important variables other than historical ones.

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9. RAMAH, 1950, 1964

Kluckhohn (1956) has explored the history of the Ramah population in detail. The area was settled by Navajos shortly after the end of the Fort Sumner internment. "The founders of the Ramah band were primarily Eastern Navajos born almost exclusively in three areas: Mount Taylor, Chuska Mountains, and San Jose River" (Kluckhohn 1966:333). There was Chiricahua, Mescalero Apache, and Walapai admixture (Kluckhohn 1956:364-365; 1966:333). Kluckhohn stated that "After about 1890 no new biological families settled in the region" (Kluckhohn 1956:367). Population fluctuation resulted from marriage and natural increase. Men generally married out to the neighboring Navajo areas of Two Wells, Pinehaven, and Thoreau. Men from these areas were recruited into Ramah. There were also spouses from Zuni, Atarque, Puertocito, etc. (Kluckhohn 1966:333). Table 9.1 shows the age and sex profile

Table 9.1: Age and Sex Characteristics at Ramah in 1950

Age (years)	Males	Females	Total
0-5	49	47	96
5-10	42	54	96
10-15	45	47	92
15-25	55	58	113
25-40	55	67	122
40-60	44	38	82
60-70	10	7	17
70+	4	3	7
Total	304	321	625

Source: After Kluckhohn (1966:354)

for the Ramah population in 1950. The population increased at an average of about 3.2 percent per annum between 1890-1950. Population density averaged about 1.4 or 2.6 persons per square mile but varied up to 6 per square mile in one area (see Kluckhohn 1966:346; Landgraf 1954:7, 47). Between 1940 and 1950, 28 men and 30 women were married for the first time. Age at first marriage is summarized in Table 9.2. Marriage tended to be brittle. Men over 60 years of age averaged 3 marriages, while women of the same age averaged 2.1 (Kluckhohn 1966:352-353). Approximately 12 percent of the marriages were with individuals from other communities.

The population of 625 persons lived in about 125 "units" or households in 1950. "A 'unit' consists of persons...who ordinarily live together (though not necessarily sleeping in the same dwelling) and who share meals, chores..." (Kluckhohn 1966:366). These units were typed as follows (Kluckhohn 1966:368):

(a) 39 nuclear families
(b) 25 nuclear families with children not of both spouses
(c) 5 nuclear families with adopted children (relatives)
(d) 6 nuclear families plus one unmarried adult
(e) 3 isolated individuals
(f) 17 one parent plus sub-adult children
(g) 11 polygynous
(h) 19 relict. A "relict" unit is "one that lacks a single complete biological family but comprises the 'remains' of two or more marriages broken by death or divorce or the 'relicts' of one such marriage plus an unmarried adult" (Kluckhohn 1966:367).

Table 9.2: Age at First Marriage by Sex at Ramah (1940-1950)

Sex	Number	Mean Age (years)	Median Age (years)	Range (years)
Male	28	19.9	20	15-26
Female	30	17.7	17	13-25

Source: After Kluckhohn (1966:351)

The "unit" or household size must have a wide range but numerical values were not given by Kluckhohn. The mean size is 5.0 individuals, unless the polygynous units are considered as composed of separate households, in which case the mean household size is 4.6 individuals.

Table 9.3 displays the camp composition. Of the 125 households, 53 could be grouped into 18 "extended families" (Kluckhohn 1966:368). Kluckhohn stated that:

> An 'extended family' comprises two or more units each of which includes one parent with a child or children and at least one of which includes both parents. These units must be linked by at least one lineal ancestor common to all children in the group. The dwellings of an 'extended family' are ordinarily within sight of each other; at any rate, they are close enough so that daily meals and work activities rather constantly cut across the lines of the distinct units (Kluckhohn 1966:367).

This definition is very much like Collier's camp but with the added criterion of lineality.

Kluckhohn distinguished the "extended family" from the "group":

> The criterion for group is primarily geographical. A group consists of two or more units that live within a radius of a few miles and are in frequent interaction. Each unit has close relatives in at least one other

> unit in the group, but there is ordinarily no lineal link of all children in the group...A group is a somewhat attenuated, less fully organized or unified extended family (Kluckhohn 1966:367).

The group thus seems to be at about the same "level" of social organization as Collier's "cooperating group" except that it is apparently composed of households, not "camps" or "extended families." Groups have less regular interaction and "more than one 'center of gravity'" (Lkuckhohn 1966:367). But Kluckhohn did seem to view them as functionally equivalent to "extended families." He noted that there were 18 extended families in Ramah, but also added:

> If one used more flexible but still relevant criteria or considered a period of a year or two earlier, one could speak of an additional 14 extended families. There are 5 uxorilocal groups, 2 virilocal, 5 mixed and 2 relict groups. There are seven clearly recognizable outfits, all but one of which are also geographical groups (Kluckhohn 1966: 368).

It is almost impossible to understand Kluckhohn's classification of the Ramah population into social units because of his confusing use of terms. He did not indicate how many households did not belong in either "groups" or "extended families." Further, we cannot be sure of the average size of Kluckhohn's "extended family." A mean of 14.7 persons per "extended family" can be calculated by multiplying the 53 "units" by 5 (the average "unit" size) and dividing by 18, the number of "extended families." This result is consonant with figures for camp size in various Reservation communities, but it does not include single household camps. Again, range was not given by Kluckhohn. Landgraf, however, states that "each family establishment consisted of about one to three buildings of various kinds and the clusters included from two to fifteen buildings" (Landgraf 1954:47). "Buildings" and "households" are not equivalent but a very rough idea is given of size range parameters. Camp size is computed to be about 7.26 individuals (see Table 9.3).

Table 9.3: Camp Composition at Ramah, 1950

Composition	Frequency
Neolocal	72
Uxorilocal	5
Virilocal	2
Mixed	5
Relict	2
Unaccounted for	4
Total	90

Source: Data from Kluckhohn (1966:368)

The distinctions which Kluckhohn made among the various components of social organization are rather ambiguous and many of his terms have no clear referents. For example, the following statement in which Kluckhohn attempted to define some of the larger social units at Ramah is not very clear:

> A group is sometimes coterminous with an outfit, and an extended family could be regarded as a more closely knit outfit that performs a greater number of functions (Kluckhohn 1966: 367).

It is clear from Kluckhohn's and Leighton's (1946:63) brief discussion of Dennehotso that households may or may not form elements in the larger social units of "extended family" and/or "outfit." About 16 percent of the Dennehotso population (a population about as large as the Ramah population) "could not be said to belong to any outfit." If a similar percentage prevailed at Ramah, then outfits would average about 75 people and could not in any case average more than 90. In 1951, Vogt estimated the number of Ramah outfits at 10, rather than 7, as noted by Kluckhohn in the quotation above (Vogt in Landgraf 1954:83).

Landgraf (1954:84) spoke of an apparently recent division of the Ramah community into two "locality units" or factions. The factions were not based on matrilineal kin ties and were rather "amorphous." Vogt also described a split between southern and northern "outfits," but also claimed that:

> In political structure the Rimrock [Ramah] group still tends to have the character of a band...and has long had a single head man. At present, the group is split into a number of factions which are not at all clear-cut, and, in fact, tend to cross-cut each other (Vogt 1951:16).

Kluckhohn agreed that factionalism was prevalent after 1942 and that the factions were somewhat amorphous.

> There have usually been two main factions, though their membership has fluctuated and some families have never consistently aligned themselves with either faction (Kluckhohn 1966: 370).

Kluckhohn concluded that:

> The evidence from Ramah indicates that Navajo social organization is based upon the association of relatives, but it is equally clear that actual patterns take many forms; matrilineal, patrilineal, and bilateral...Some groupings arise not from standard factors of Navaho culture but individual likes and dislikes and from economic convenience (Kluckhohn 1966:368).

Kluckhohn (1966:346) noted that the Ramah Navajo controlled about 153,600 acres in 1950. Most of the area was leased, 43,331 acres were in allotments, and 1,600 acres were homesteaded. Most of the land was used for grazing (126,355 acres) and little was cultivated (1,085 acres, about a third of the 1941 cultivated acreage). Sources of community income are given in Table 9.4. "A very rough estimate of per capita real income would be $230" (Kluckhohn 1966:348). However, Kluckhohn included the value of home-consumed agricultural products and livestock as well as wool, hide, and lamb sales. Adams (1963:122) estimated home consumption to be about half the total livestock income for Shonto in 1955. If such were the case at Ramah, then total community income would be nearer to $100,000 and per capita income closer to $160.

Table 9.4: Total Community Income by Source at Ramah, 1950

Source	Amount	Percent
Livestock	$ 70,000	50.5
Wage (railroad)	12,000	8.7
Wage (other)	24,000	17.3
Welfare	23,000	16.6
Agriculture	5,000	3.6
Handicrafts	1,500	1.1
Miscellaneous	3,000	2.2
Total	$138,500	100.0

Source: Data from Kluckhohn (1966:348)

Livestock seemed to be the focus of most Ramah Navajo activity, but discrepancies in holdings were observed. Forty-four percent of the families owned no sheep and 9 percent of the sheep were owned by one family (see Table 9.5).

In all there were at least 10,694 sheep units representing some 7,318 sheep, 580 goats, 460 horses, and 199 cows, plus some swine, burros, and poultry. The unequal distribution of livestock points to heterogeneity in community subsistence patterns and, indeed, Vogt claimed that "In general, the poorer families are dependent upon agriculture and wage-work; the richer families upon livestock" (Vogt 1951:16).

Kluckhohn also described some consumption patterns. Of interest is his observation that "less than 12 percent of Navaho buying in the Ramah area is by cash" (Kluckhohn 1966:348).

Kluckhohn's 1966 article seems to be the only work on the Ramah Navajo that can be considered an ethnography, covering in some detail a wide range of topics including demography, social organization, and religion. However, there are many gaps which cannot be filled from other sources, even though there are a large number of publications concerning Ramah. Kluckhohn's economic data are approximate. Nevertheless, they are more clear than his information about social organization. The figures for per capita income seem reasonable when compared to the Human Dependency Surveys conducted about a decade earlier and to later work on the Navajo Reservation. Although camp size was not calculated by Kluckhohn, we have estimated that camp size at Ramah was considerably lower than in other Navajo communities. We based our estimate on Kluckhohn's and Landgraf's data. However, since some of Kluckhohn's social organization material is confusing and apparently incomplete, we have had to make assumptions at points in our interpretation of his analysis. Our assumptions used to estimate camp size from his data may not be entirely valid.

Reynolds et al. (1967) reexamined the social organization of the Ramah Navajo in 1964. They stated that over 1,000 Navajo were living in the Ramah area. This figure represents an annual population increment of over 3.4 percent since

Table 9.5: Distribution of Livestock by Family Ownership at Ramah, 1950
(N = 126 families)

Number of Families Owning	None	1-5	6-20	21-50	51-100	100-300	300+
Beef cattle	119	6	-	-	1	-	-
Sheep	55	2	14	13	18	18	6
Goats	67	17	33	9	-	-	-
Swine	123	3	-	-	-	-	-

Source: Data from Kluckhohn (1966:347)

1950. Such a rate of population growth is consonant with the earlier (1890-1950) rate and with rates computed for other Reservation areas.

These authors defined four "social units": the household, the camp or "residence group", the sibling group, and the outfit. The household is defined as those individuals who live in the same dwelling and share the same eating and sleeping arrangements. The camp is comprised of clusters of hogans, cabins, and corrals. Members of the camp cooperate in such matters as herding sheep, cultivating fields, hauling wood and water, and providing transportation. A "sibling group" is a set of brothers and sisters and their families who form a unit of economic cooperation and land control. An "outfit" is defined as a couple, their married children, and married grandchildren, presumably with the further criterion of occasional cooperation, especially in major activities.

The camp size in Ramah can be estimated to have an average value of about 10 individuals per camp. This value may mark a dramatic increase in the average camp size since 1950. Although the mean is a relatively deceptive figure when there are a large number of camps, the mean size of all camps at Sheep Springs is greater by 3 individuals than the mean of nuclear camps, and 3 or more below the mean of all extended camps.

Table 9.6 shows the camp composition while Table 9.7 displays patterns of postnuptial residence for 136 couples by the age of the husband. Uxorilocal and virilocal residence denote residence near wife's kin or husband's kin, respectively. Neolocal residence is based on non-kinship criteria and is residence apart from near kin of spouses. The six cases of "other" were sororilocal (2) and fratrilocal (4). Independent couples are "within the outfit area" of either the wife's or husband's

Table 9.6: Camp Composition at Ramah, 1964

Composition	Camps
Nuclear family	46
Uxorilocal	23
Mixed	10
Sibling	9
Virilocal	7
Affinal	5
Isolated individuals	3
Total	103

Source: Data from Reynolds et al. (1967:189)

Table 9.7: Post-Nuptial Residence by Age of Husband, Ramah, 1964

	Age of Husband			
Residence	35	35-55	55	Total
Uxorilocal	30	9	0	39
Virilocal	14	10	0	24
Neolocal	12	6	0	18
Independent	4	24	21	49
Other	4	2	0	6
Total	64	51	21	136

Source: Data from Reynolds et al. (1967: 191) kin but are camp heads. Thus, "the couple (or individual) that acts as head of an extended family residence group is used as the point of reference, and its residence is considered independent" (Reynolds et al. 1967:189).

Reynolds et al. (1967) were interested in the way in which social organization was linked with economic functions through the "resource controller." There were 52 resource controllers in 1940 and presumably there were more in 1964, although the authors did not specify the number.

> For a given set of resources...there is likely to be an individual who is considered to be more competent than others in its care and maintenance. This is the role of the resource controller" (Reynolds et al. 1967:191).

The authors demonstrated the economic stratification of Ramah. "In general the categories of wealth correspond to the ecological differences in the Rimrock area" (Reynolds et al. 1967:189). Three categories were recognized:

1. "Wealthy families" which own sheep herds of more than 300 head, do little farming and some members of which are engaged in steady wage work.
2. Families of "average" income with herds of 100 to 300 sheep, large fields, members in occasional wage work and a little welfare.
3. "Poorer families" with only a few sheep, some farming and occasional wage jobs but with a sizeable amount from welfare payments.

The Navajo at Ramah controlled 155,000 acres. Wealthier families used the grazing lands covering large areas of basalt, average families used hill and valley areas, and poorer families used the eroded southwestern part of the Ramah area. Unfortunately, no quantitative income or other economic information was given in the study.

Siblings in wealthier families generally occupied contiguous territory, although "pockets" of non-related families occupied allotments in the midst of such a territory. "In average and poorer families the occupation of contiguous territory by siblings is not quite as prevalent" (Reynolds et al. 1967:192).

In the authors' opinion, "The traditional expansion pattern has not been destroyed by the allotments; it is only slightly altered by the 'intrusive' residence groups" even though, during the last 24 years "The fragmentation of outfits in Rimrock has taken place" (Reynolds et al. 1967:197).

Much of the confusion in the literature concerning the larger cooperating groups was due, the authors maintained, to the fact that no investigator had defined these entities in terms of specific genealogical links (Reynolds et al. 1967:199). Nevertheless, they did admit that a large amount of variability existed in the more inclusive Navajo social groupings. They concluded their paper by positing that the residence group, or camp, is the main unit of Navajo social organization.

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10. MEXICAN SPRINGS, 1953

Aberle interviewed 32 adults at Mexican Springs in 1953. The community was considered to be well above average in terms of amount of outside contact, and was chosen for comparison with Aneth. The Mexican Springs community is only 19 miles from Gallup. Certain parts of the Chapter area, which extends into the Chuska Mountains, are further from Gallup.

Originally a sample of 42 people was drawn. For various reasons 10 of them could not be reached - a failure rate of 24 percent (Aberle 1966:93). Since only 6 Peyotists turned up in the initial sampling, 3 Peyotists were added for the purpose of Aberle's study, but were left out of the community tabulations (Aberle 1966:241). Aberle can hardly be faulted for his sampling procedure since a "community study" was ancillary to the purpose of his research. Nevertheless, the sample problem should be noted and generalizations for comparison with other studies should be made with caution.

Of 32 informants, 13 (41 percent) were male, 17 (55 percent) were 51 years of age or over, and 53 percent lived in nuclear as opposed to extended families. The sample is not representative of a normal population, but is skewed toward higher age and, in consequence, toward a low education level. Nor is it possible to infer the camp composition of the area.

According to Aberle, there was a shift from reliance on traditional pursuits to wages. Fifty-eight percent of those interviewed depended to some extent upon wages, and 21 percent received some support from welfare. At the same time, however, 91 percent of all respondents owned stock and 37 percent relied upon livestock for a major proportion of their income.

Mexican Springs was particularly hard hit by stock reduction in the 1930s (Spicer 1952:199-200) as is shown in Table 10.1. In 1953, none of those interviewed had more than 200 sheep units. Aberle stated that "a subsistence herd for a family of five should include a minimum of 250 sheep units" (Aberle 1966:84). If such is the case, then approximately 38 percent of the community may have lived above that minimum before stock reduction. In 1953, no families did. There was also some farming in the Mexican Springs area. Aberle did not discuss whether some balance between farm and livestock might lower the sheep unit minimum. Navajo farms are usually very small and, indeed, may generally have only a small supplementary role in subsistence. Also, Mexican Springs is not as good an agricultural area as is Fruitland, where government-sponsored irrigation farming failed to provide bare subsistence in the early 1950s (Sasaki 1960).

Between 1938 and 1953, 91 percent of the male respondents (and husbands of female respondents) had been employed. The longest job for 16 men had lasted less than 9 months. Of the 13 male respondents, 54 percent had held a job for 11 or more years during that period. The main sources of employment for men were: railroad, 5; seasonal agriculture, 1; Indian service, 5; other, 2. Sixty-two percent of the men with jobs were able to be home most of the time.

Almost two-thirds of the respondents had voted in the Tribal and Presidential elections. Of those voting in the national election, Republicans outnumbered Democrats 2 to 1. Ninety-four percent said they were Christian (Catholic, 47 percent; Protestant, 41 percent; Latter-Day Saints (LDS), 6 percent; unknown, 6 percent).

In response to the question: "What do you do when some one in the family gets sick?" 97 percent of the sample mentioned White medicine. Forty-seven percent mentioned only White medicine, and 50 percent mentioned it in conjunction with Navajo practices. Nine percent mentioned only Navajo practices and 12 percent said they used Peyote ceremonies. About two-thirds had had one or more children born in the hospital. The use of modern facilities (97 percent) was greater than the stated

Table 10.1: Stock Ownership by Size of Flock in Sheep Units at Mexican Springs

Number of Sheep Units	Percent of Stock Owners	
	Before Stock Reduction	1953
None	0	9
1-25	0	19
26-50	6	28
51-100	16	29
101-300	41	15
301-500	16	0
501-800	3	0
801-1,200	16	0
1,201+	3	0

Source: Data from Aberle (1966: 94, 101) preference for White medicine (81 percent).

Attitudes toward formal education were generally positive: 64 percent felt that children should finish high school and another 16 percent felt that they should go beyond high school.

Mexican Springs, in terms of its relative reliance on wage work and livestock, its proximity to major centers (e.g., Gallup), and its ecological setting, seems to be similar to Sheep Springs. The answers concerning relationships with relatives at Mexican Springs are interesting in this context (Aberle 1966:100-101). Forty-one percent of those interviewed at Mexican Springs received help in some fashion from relatives, and another 12 percent said they could obtain help if they asked. Of the 19 respondents dissatisfied with help from relatives, 58 percent were dissatisfied, also, with help from "friends." Eighty-eight percent felt that people helped less today than in the past, and 75 percent felt that people in the community did not get along together or work together very well. Aberle concluded that the "network of kinship" was "declining in importance." The common explanation for declining help "was that people no longer have the means to help" (Aberle 1966:105).

The Mexican Springs and Aneth surveys made by Aberle are useful because they highlight the differences between Navajo communities. However, because of small sample size and certain biases in sample selection, generalization from the measurement of any particular variable should be made with caution. The overall patterns of response, stressed by Aberle, seem most reliable.

Reference:

Aberle, David F.
1966 The Peyote Religion Among the Navaho. Chicago: Aldine.

11. ANETH, 1953, 1961, 1966

As part of a larger study of Navajo Peyotism, Aberle undertook a survey of two Navajo communities to get a "look at the Navaho people as they were in the 1950's" (Aberle 1966:91). To do this he selected two Navajo communities to be sampled and interviewed: Aneth, in District 12 in Utah, and Mexican Springs, near Gallup (District 14).

In 1953, Aneth was reported to be a relatively remote community with bad roads and little access to facilities. In 1961, Harvey Moore, who had done the Aneth interviewing under Aberle's direction eight years before, restudied the community using a similar interview and sample format. By 1961, oil and natural gas resources were being exploited and there was more access to neighboring Anglo communities (Moore 1967:125).

The sample was small and probably only partly fulfilled requirements of independence. Aberle gave a general description of the problem of sampling, and concluded that "The result was undoubtedly a sample lower in education, higher in age, and with more women than a random sample of all individuals who had their base in the community" (Aberle 1966:92). Specifically, all those interviewed were over 25 years of age and resident in the community during the summer of the interviewing. An attempt was made to interview no more than one person per family.

The boundaries of the "community" of Aneth were not delineated clearly by either Aberle or Moore. Apparently they considered it to be the whole area north of the San Juan River in the Utah portion of the Navajo Reservation, which is the Aneth Chapter.

In 1953, there were 24 respondents according to Aberle (1966:92-93). These were taken from an original roster of 26: one refused to be interviewed, the other could not be reached. In addition, Moore (1967:126) interviewed an interpreter in 1953. Moore (1967:125-126) further gave the impression that 27 individuals were interviewed in 1953. However, Aberle (1966) has more extensive data and we will use the data for his 24 respondents in 1953. Moore referred to the original sample of 26 as the "Panel Group." He noted that "It was possible to reinterview twenty-one of the Panel Group in 1961 and to interview sixteen additional persons using a formal interview schedule" (Moore 1967:126). Hence the sample for 1961 was 37 persons. The 1961 Aneth sample was inhomogeneous. The problems of randomness that were inherent in the 1953 sample were compounded since 21 of the original group were chosen. These older respondents (if the sample was weighted toward age in 1953, it was even more weighted in that direction in 1961) were combined with the 16 others to form the "Total Group." Moore divided the 1953 sample into "Total" and "Panel" groups, but this classification does not seem worthwhile. Thus, only 3 groups will be dealt with here: the 1953 sample reported by Aberle, the 1961 Panel group (an 87.5 percent follow-up of the 1953 sample), and the 1961 Total Group which is a group with dubious significance.

In 1953, 8 individuals, representing 33 percent of the 24 respondents, were male; 13 (54 percent) were aged 51 or over; 15 (62 percent) lived in nuclear as opposed to extended families; and 18 (75 percent) were married. It is unfortunate that Moore did not provide similar data for his respondents in 1961.

The number of individuals owning flocks of various sizes is presented in Table 11.1. We assume that the flock sizes were expressed in sheep units, although the unit of measurement was not explicitly stated in the Aberle and Moore studies. Before stock reduction, 7 respondents had over 800 sheep units and only 2 had less than 100. The decrease in stock holdings was still a major concern in 1953, but by 1961 the concern had abated despite the fact that stockholding had not increased.

In 1953, 33 percent of all respondents derived their major portion of income from wages, while 38 percent relied primarily on their livestock. Aneth was, in effect, far more pastoral than was Mexican Springs. Fully 25 percent of the respondents listed welfare as their primary source of income.

Moore reported that wage work decreased as a primary source of income between 1953 and 1961. Much of this decrease was undoubtedly due to the fact that older people were over-represented in the sample at the outset, and, of course, all the individuals were 8 years older by 1961. As would be anticipated, there had been a concomitant increase in the proportion of respondents receiving welfare and social security during the 8-year period.

In 1953, 67 percent of the Aneth respondents voted in Tribal elections, but none voted in federal elections (Aberle 1966:99). In 1961, a greater "knowledge" of the Tribal Council was observed and 27 percent (of the Total Group?) reported voting in the 1960 national elections. About 80 percent voted Democrat (Moore 1967:126-127).

In 1961, 88.6 percent of all children between the ages of 6 and 18 were in school. Only 5.7 percent of children in this age bracket had never attended school. In general, there was a marked increase in school attendance and in the importance given to formal education (Moore 1967:132-133).

In 1953, church membership for Aneth respondents was: Navajo (or no church), 46 percent; Christian, 24 percent; Peyote, 17 percent; some combination (or unknown), 12 percent (Aberle 1966:97).

In 1953 the preferred curing practice was: Navajo, 12 percent; White, 4 percent;

Table 11.1: Stock Ownership by Size of Flock at Aneth

Number of Sheep Units	Percent of Stock Owners	
	Before Stock Reduction[a]	1953[b]
None	0	14
1-25	4	18
26-50	4	27
51-100	0	18
101-300	39	23
301-500	13	0
501-800	9	0
801-1,200	17	0
1,201 or more	13	0

[a] N = 23

[b] N = 22

Source: Data from Aberle (1966:94, 101)

Navajo and White, 12 percent; Peyote, 8 percent; Peyote and Navajo, 12 percent; Peyote and White, 4 percent; all of the above three practices, 25 percent; all of the above three practices plus sucking cure, 21 percent (Aberle 1966:98). It is interesting to note the discrepancy between stated preference and the response to the question "What do you do when some one in the family gets sick?" In this case, the preferences were: Navajo medicine, 17 percent; White medicine, 38 percent; Navajo and White, 33 percent; Navajo and White plus sucking cure, 4 percent. Four percent mentioned both Navajo practices and Peyote. One person (representing 4 percent of the sample) did not answer this question (Aberle 1966:97).

In 1961, preferences were: Western medicine, 56.7 percent; Navajo medicine, 24.3 percent; Peyote, 5.4 percent; no preference, 5.4 percent (Moore 1967:131-132). (Moore's term "Western medicine" referred to the same practice as Aberle's term "White medicine.")

Again, use and preference were not coincident. About 97 percent of the Aneth respondents in 1961 claimed to use Western medical facilities (62.1 percent of the Total Group used private facilities, 35.1 percent used federal facilities). Some 83.7 percent had sings, including 94.5 percent of those using the hospital.

The brief report by Moore (1967) is most helpful in noting the direction and types of change rather than the measurement of that change. The studies of Aneth by Moore and Aberle, and the restudy by Moore, present considerable quantitative material, but still are somewhat impressionistic. For instance, employment patterns based on 8 males in 1953 and an unspecified number of males in 1961 cannot be taken as a very adequate reflection of the community, especially since the data are skewed toward low education and older age. Aneth must also be seen as a rather unique area of the Reservation; it is the only Chapter wholly in Utah and is politically, and perhaps economically, unique.

In 1966, Nielson (1967), a graduate student in geography, studied culture change in the Aneth area. Nielson appears to have been unaware of Moore's earlier work. The sample studied included all families (population 845) carried on the rolls of the San Juan County, Utah, Department of Public Welfare. In addition, Nielson personally interviewed another 28 families. The 144 families on the welfare rolls represented about 60 percent of the total Aneth population in 1966.

Although Nielson's sample was larger than Moore's, it is no less biased. The use of welfare recipients alone exaggerates the poverty of the area, despite the fact that Aneth is economically undeveloped. No independent check on the reliability of the information contained in the records was made and it is quite possible that families on welfare tended to under-report their income. Only 35 percent of the families reported owning an automobile or truck. But 71 percent of the families interviewed personally by Nielson owned a motor vehicle. Nielson did not discuss the issue posed by this discrepancy in his findings (Nielson 1967: 69-70).

Also, he presented little demographic information. Population density would have been 4 to 5 persons per square mile if the estimation of the total population were correct. The average size of welfare families was 5.87.

Information for 548 individuals indicated that 30.5 percent had no education, 51.3 percent had not completed 8th grade, 16.4 percent had not completed 12th grade, and only 1.8 percent had completed high school (Nielson 1967:84).

Seventy-five percent of the total sample and 86 percent of the interviewed sample had worked for wages at some point in their lives. Wage labor for Aneth Navajos was seasonal. Only 14.3 percent of Nielson's respondents were employed at the time of interview and, although the El Paso Natural Gas Company had operations in the area, no Aneth Navajos were on the payroll in August 1966 (Nielson 1967:25). Sixty to 75 percent of all Aneth families were estimated to receive some form of welfare support. Three of the 20 Navajo families owning allotments on Montezuma Creek received small oil royalties (Nielson 1967:24, 89, 113, 118). Half the families on the welfare rolls reported having livestock (usually sheep and goats), but flocks were very small (Nielson 1967:113-117).

Nielson's data on religious preferences and health behavior generally agreed with Moore's, although Nielson did not have data on Peyote use. Thirty-one percent of all welfare families claimed affiliation with a Christian church, and the remainder classed themselves as traditionalists.

Over 90 percent of all welfare families and 86 percent of interviewees used modern medical facilities. Many utilized Navajo ceremonies as well (Nielson 1967: 94-99).

Nielson concluded that "altogether. a picture of an economically depressed area emerges" (Nielson 1967:129). The picture was clear but not extensively detailed. However, the samples used by Nielson cannot be considered as truly representative of the Aneth community. Because only the poorer segment of the community was described, little can be said concerning the economic stratification and the distribution of power within the community. In general, Nielson's thesis fulfilled its goal of describing the process and consequences of culture change among the Aneth Navajo.

References:

Aberle, David F.

1966 The Peyote Religion Among the Navaho. Chicago: Aldine.

Moore, Harvey C.

1967 "Culture Change in a Navaho Community." In American Historical Anthropology: Essays in Honor of Leslie Spier. Carbondale: Southern Illinois University Press.

Nielson, John D.

1967 "The Geography of Selected Aspects of Cultural Change Among the Navajos of the Aneth Area, Southeastern Utah." M.S. dissertation, University of Utah.

12. CANYONCITO, 1958[1]

From 1956 to 1958, Ronald Kurtz studied culture change among the Navajos of Canyoncito, New Mexico. The main field period was from winter to summer in 1957. The results of Kurtz's study are reported in his unpublished doctoral dissertation (Kurtz 1963) and in an article on role change (Kurtz 1969). At the time of Spanish contact in 1583, "the Canyoncito were agricultural people who had regular trade relations at least with the nearby Pueblo people of Acoma" (Kurtz 1969:83). In aboriginal times, the Canyoncito area Navajo population consisted of from 500 to 750 people living in six or seven "local communities" which relied on agriculture for "over 50% of the total subsistence" (Kurtz 1969:87). During the 19th century, under United States domination, these "local communities" apparently fared differently. The Canyoncito people received a reservation while their neighbors around Mesa Gigante were given allotments (Kurtz 1963: 134).

Demography

By 1900, the "community" of Canyoncito Navajo consisted of about 200 individuals controlling about 75 square miles of land. Matrilocality was predominant and polygyny was estimated at 20 percent (Kurtz 1963: 137-139). There was an overall population density of about 2.7 persons per square mile, but the land was of variable quality. Only about 7 percent was in the flat canyon bottom land which is best suited for agricultural purposes (Kurtz 1963: 137). From 1900 to 1958, the population of the Canyoncito Navajo grew. Kurtz gave the following estimates of population at various dates: 1928, 205 people; 1937, 270 people; 1944, 410 people; 1958, 624 people (Kurtz 1963:149, 158).

The 1958 figure included off-Reservation residents. Only 275 people were resident on the Reservation for at least 11 months of the year. In addition, 70 individuals were resident over 6 months of the year in Canyoncito, and 88 youths attended school off the Reservation. Another 84 individuals were apparently transient, living on the Reservation during the year but for less than 6 months. One hundred seven individuals were counted as permamently non-resident, although 83 lived in Albuquerque, which is less than 50 miles from the Reservation (Kurtz 1963: 157).

Kurtz noted that the category of permanent residents was over-represented by females (59 percent of the category) and persons over 41 years of age (52.3 percent of all those 41 years of age and older were permanent residents, including 65 percent of all women, but only 34 percent of all men). Seventy-seven percent of all those over 61 were permanent Reservation residents. About half of all males 21 or over lived on the Reservation for between 1 and 11 months per year, while only slightly more than a quarter were full-time Reservation residents. This figure would seem to indicate that men, especially younger men, were leaving the Reservation for extended periods during the year to seek employment. At the same time, over a sixth of the total population and over a fifth of all adults aged 21 to 60 had apparently taken up residence permanently away from Canyoncito (Kurtz 1963: 158-160).

The population and residence figures summarized above show that a basic change had taken place in Canyoncito since the beginning of the century. The population between 1928 and 1958 had been rapidly increasing (by about 204 percent in 30 years). Using the estimates of population given above provided by Kurtz, one can calculate per annum percentage population increases. By using Barclay's (1958: 28-33) method and considering each time interval, the following average annual growth rates are obtained: 1928-1937, 3.1 percent; 1937-1944, 6.2 percent; 1944-1958, 3.1 percent. These figures may reflect different enumeration procedures at different dates introducing various biases. An overall average annual growth rate of 3.8 percent is obtained by using the 1928 and 1958 figures, and is in line with growth rates calculated for other Navajo communities.

An annual growth rate of about 4 percent obviously would put stress on the land base and, indeed, the actual number of permanent residents in Canyoncito was only a third greater in 1958 than in 1928, if all 1928 residents were permanent. The land base of the Canyoncito Navajo Indian Reservation was 90 square miles (Kurtz 1963:54). Thus, the population density in 1958 was about 3 individuals per square mile, or only slightly greater than it was around 1900. However, if only the 107 non-residents are excluded, i.e., if all persons who lived on the Reservation for more than 1 month per year are taken into consideration, then the density is found to be about 5.75 persons per square mile.

Economics

While Kurtz (1969:85) claimed that "only after 1930 does their culture begin to succumb to external influences" he also stated that:

> By 1956 to 1958...the Canyoncito had experienced an almost total loss of a subsistence base. Only a few wealthy individuals are able to support themselves by permanent jobs in Albuquerque, seasonal wage work, or welfare checks and surplus commodity products. The economic dependency of the Canyoncito is extreme (Kurtz 1963:152).

The date given by Kurtz for the yielding of the Canyoncito to Anglo influence seems to correspond to the beginning of increased demographic pressure on a confined land base during a period of economic upheaval. About 1940, the economy shifted from farming to livestock (Kurtz 1963: 161): "few successful fields of corn have been planted since 1942" (Kurtz 1963:151). There was a concomitant shift to a dispersed settlement pattern rather than the more sedentary local summer community based on agriculture (Kurtz 1963:161, 172).

The shift from subsistence agriculture to livestock herding, however, could not support the Canyoncito on their limited land base. "A basic fact of Canyoncito ecology is the inadequacy of the subsistence base" (Kurtz 1963:186). Thus new sources for gaining a livelihood were necessary by the 1950s. A relief program to aid widows and children was begun in 1951 and the Navajo Tribe supported several building projects (Kurtz 1963:204). By 1958, however, off-Reservation wage work was the main alternative to livestock raising.

It is unfortunate that Kurtz did not give an extensive account of approximate incomes or the wage labor adaptation of community members. He did, however, give some indication of the general involvement in wage work. By about 1940, a few Canyoncito Navajo had begun to assume permanent occupations in the wage labor work force. In 1958 at least 22 of them held permanent jobs. Professions included ranch hand, restaurant worker, clerk, cabinet maker, and nurse. Only two of those with permanent jobs also lived on the Reservation permanently - these were two bus drivers (Kurtz 1963:258-259).

Seasonal wage work was a more common adaptation to the wage labor economy. Most of the adults seemed to be involved in this adaptation. Generally, those low in the status system were those most often taking seasonal jobs (Kurtz 1963:259). In addition, younger families with little or no livestock were more likely to be away from Canyoncito for longer periods than were somewhat older families owning more sheep. Over 90 percent of the jobs taken by the Canyoncito were on farms and ranches (Kurtz 1963:159).

Social Structure

Because of the way in which Kurtz organized his data on family structure, size, and residence, it is difficult to compute some basic statistics. There were about "115 single residence structures" which formed elements of "the basic residence units" (Kurtz 1963:162). These units would seem to be equivalent to Collier's "household" and "camp," respectively. Excluding the 107 non-residents, the average number of individuals occupying a single residence structure would be about 4.5. Including only permanent residents lowers the figure to 2.4, if one assumes all residences were always occupied.

In 1957 there were 29 extended families and 7 nuclear families in Canyoncito. The residence patterns of 67 married couples were given as: 5 neolocal, 10 percent; 16 patrilocal, 24 percent; 44 matrilocal, 66 percent. There were also 13 nuclear and 2 extended families living off the Reservation (Kurtz 1963:164-165). Unfortunately, average family size was not estimated.

Kurtz did provide information on marriage. One hundred sixty-seven Canyoncito Navajos were married (including at least 3 marriages with non-Navajos). Three percent of the marriages were cases of sororal polygyny. For about a third of those married (57), their present marriage was not their first. Higher status families in Canyoncito tended to be more stable (Kurtz 1963:167-170).

Two "outfits" were identified. One consisted of an old couple, their non-resident children, and the latter's families. The other was composed of two cooperating extended family groups. These groups represented kinship-based organization above the camp level, but included only a few people within the community. Nevertheless, the male heads of the outfits were the major local leaders in political affairs of the Canyoncito Reservation (Kurtz 1963:171-173).

A consistent theme in Kurtz's work on the Canyoncito Navajo is the presence of status differences within the community. A contrast between the wealthy and the poor has deep historical roots. During the 18th and 19th centuries:

> The wealthy Navajo were friendly to other high status Navajo and certain alien people. At the same time they had strained relationships with the lower status raiders. The poor, who could not be checked, raided other Navajo groups and alien peoples in an attempt to improve their economic position (Kurtz 1969:90).

By 1958, of course, the nature of the status hierarchy had changed. Poorer, low status families had limited access to local resources and owned fewer sheep and cattle. In consequence, lower status people remained off the Reservation for longer periods of time to seek a living. In addition, more lower status Canyoncito Navajos took low-paying seasonal jobs in agriculture. Finally, lower status Canyoncito Navajos had less stable family ties. The factor of status differences has often been neglected in studies of Navajo communities, and Kurtz's data and insights go a long way to remedy this omission. Still, many of Kurtz's conclusions would be stronger if more quantifiable data on families and economics were provided.

Footnote:

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[1] We consider Canyoncito as technically a separate reservation--the Canyoncito Navajo Indian Reservation--apart from the Navajo Reservation. In sketching the history and extent of the Navajo Reservation in the 1961 Navajo Yearbook, Young (1961:263) stated that "The Canyoncito and Alamo bands of Navajos, living at locations remote from the main body of the Tribe, utilize comparatively small acreages of alloted, tribally purchased, and federal land, and these areas are under the jurisdiction of the United Pueblos Agency." Kurtz (1969:105) stated that "The designation, 'Canyoncito Navajo'" refers to "the residents of the Canyoncito Navajo Indian Reservation." The Canyoncito Navajo in 1958 were living on a reservation separate from that of Navajo Reservation and were under a separate BIA jurisdiction. On the other hand, according to Williams (1970:47), both Alamo and Canyoncito (while separate Reservations) are considered "chapters" in the political structure of the Navajo Nation.

References:

Kurtz, Ronald J.

1963 "Role Change and Cultural Change: The Canyoncito Navaho Case." Ph.D. dissertation. University of New Mexico.

1969 "Headmen and War Chanters: Role Theory and the Early Canyoncito Navajo." Ethnohistory 16:83-111.

13. FORT DEFIANCE, 1959

In 1959, Bosch (1961) surveyed the community of Fort Defiance, Arizona. He reported that the community had an estimated population of 1,721. There were 1,174 Navajo, 407 Anglo, 56 of other groups, and 84 of unknown affiliation. Bosch obtained interviews from 119 Navajo households and 38 Anglo households and estimated that he covered 57 percent of the Navajos but only about one-third of the Anglos (Bosch 1961:12). The plan was to make a total survey, but this goal was not attained. Random sampling was apparently never considered.

Fort Defiance was divided into 14 neighborhoods which were "oriented" toward the government complex and trading post. Five of the neighborhoods were state or federal housing areas and 7 were areas of private (i.e., Navajo) housing. The 2 remaining neighborhoods were connected with the mission and the trading post. Eight neighborhoods were exclusively Navajo, 3 predominantly Anglo, 2 predominantly Navajo, and the last was an approximately equal mixture of Anglo and Navajo. Two of the Navajo neighborhoods included areas "up to 2-1/4 miles out of 'town'" (Bosch 1961:7). The extent to which Navajos in different neighborhoods were sampled ranged from less than 30 percent to 100 percent. Such variation has probably biased the results in some manner. It seems that government housing areas were the least adequately sampled. Bosch estimated that about 30 percent of the Navajo families lived in government housing, but only about one-half of these were contacted. On the other hand, over 70 percent of the families in other neighborhoods were reached.

In 1959 at Fort Defiance, of Bosch's sample of 651 Navajos, almost 50 percent were under 19, and almost 20 percent were 5 years of age or younger. According to Bosch, this age profile differed from the rest of the Reservation which had more children in the 0-5 age range and fewer in the 6-18 age range. Bosch did not state whether or not other areas may have had a greater number of children at boarding school, and he did not give details of the enumeration in the other areas mentioned.

Length of residence in Fort Defiance was ascertained for 115 Navajo families. Fifty percent (58) had lived in Fort Defiance for over 18 years while only 3 families (2.6 percent) had moved into the area within the period of 12 months prior to interviewing. Although those living in government quarters had been employed at their present job (median = 8 years) longer than elsewhere (median = 4 years), the figures for the length of residence may be skewed due to the large proportion of Navajo respondents from non-government neighborhoods (Bosch 1961:16).

The mean household size was 5.6 persons for the Navajo sample compared with 3.3 for the Anglo sample. In exclusively Navajo neighborhoods, the average number of people per dwelling ranged from 5.5 to 7.2. The extremes in means occurred in areas completely surveyed. Ranges in household size were not given. Bosch did not indicate whether households were organized into camps or other social units beyond that of the household.

Information concerning income was collected from 111 families. Table 13.1 summarizes income by source and Table 13.2 gives income by amount. A number of families derived income from more than one member and hence probably from more than one source. Bosch did not clearly define household head. About 64 percent of the household heads were employed in wage labor, and the heads of 39 households were not employed. Retired individuals were classed as wage earners.

Twenty-two families gained some income from livestock or farming, but this was a small amount totalling $3,188, or about $145 per family. However, there may have been under-reporting of stock. Welfare, including unemployment, retirement, etc., was an income source for a smaller number of families (15), but represented a large amount of income, totalling $26,016, or about $1,734 per family.

The mean of total family income was $4,244.50, and the median of total family income, including the unemployed, was $3,374.00. Excluding unemployed, the median was $3,436.50. The mean per capita income was in the neighborhood of $757.

Bosch also examined a few aspects of the consumption pattern. An interesting fact was that about 44 percent of the Navajo households surveyed did most of their shopping in Gallup and 52 percent had credit accounts there. In general, people in the outlying neighborhoods tended to shop less in Gallup and more in Fort Defiance than did the residents of Fort Defiance proper.

Table 13.3 shows the relationship between family income and family size. Little can be concluded from this Table except that the majority of small families (78 percent) are also in the lowest income bracket. The significance of this fact is dubious because most families regardless of size fall in this range.

Table 13.1: Source of Income by Household in Fort Defiance, 1959

Main Source of Income	Number of Households	Percent
BIA	26	23.4
Tribe	16	14.4
USPHS	15	13.5
Private business	8	7.2
Stock raising	8	7.2
Welfare	8	7.2
Public school	6	5.4
Job of non-household head	6	5.4
Unemployment compensation	2	1.8
Retirement	1	0.9
Rental	1	0.9
Weaving	1	0.9
"Peddling"	1	0.9
No source given	2	1.8
No income	10	9.0
Total	111	99.9

Source: Data from Bosch (1961:23, 24)

Table 13.2: Income Level by Household and Household Head in Fort Defiance, 1959

Income (dollars)	Number of Households	Number of Household Heads
None	10	19
less than 1,500	16	14
1,500-3,499	28	31
3,500-4,999	26	38
5,000 or more	27	5
Total	107	107

Source: Data from Bosch (1961:25)

The major portion of Bosch's work dealt with the housing conditions in Fort Defiance and with attitudes toward housing. The mean dwelling size was 403 square feet in Fort Defiance, greater than the Reservation average of 268 square feet. More important was the fact that 66 percent of the houses were smaller than the mean figure (i.e., the curve of the distribution was skewed). Some of Bosch's data on population and dwelling size in Fort Defiance have been compared to other Navajo communities by Young (1961:307-309).

Bosch's information concerning family size and income was based on data from between 107 and 116 families, depending on the variable. This sample was slightly more than 50 percent of the Navajo families estimated to be in the target area. If the families had been selected randomly, then the sample would certainly have been adequate. However, the sample was not chosen randomly. It appears that the sample may be skewed to an unknown degree because a disproportionate number of families in outlying neighborhoods and other non-government housing areas were contacted. If this skewness exists, then per capita income calculated from Bosch's data may be too low and should be considered in any case as only an approximation.

Reference:

Bosch, James W.

1961 Fort Defiance: A Navajo Community in Transition. Results of a Survey Conducted by the Public Services Division of the Navajo Tribe. Vol. 1. Window Rock, Arizona.

Table 13.3: Family Income by Household Size in Fort Defiance, 1959

Income (dollars)	Household Size 1-3	4-6	7+	Total
Less than 3,500	14	18	20	52
3,500-4,999[a]	2	14	12	28
5,000 or more	2	14	13	29
Total	18	46	45	109

[a] Bosch's figure of 4,000 is very likely a misprint.

Source: Data from Bosch (1961:59)

14. FRUITLAND, 1948-1956

From 1948 to 1956, some 19 staff members of the Cornell University Southwest Project collected data on the Navajo Reservation in the area of Fruitland, New Mexico. The study focused on culture change. The community extended along the south bank of the San Juan River between Farmington and Shiprock. It was divided into three "units" with Unit 1 in the east and Unit 3 in the west.

A large number of separate studies were made using different samples of the total resident population. Thus, although nearly every adult male was interviewed at least once (Sasaki 1960:x), the information gathered was not always the same. Few of the variables examined by the different researchers on the Cornell Project used the total population of Fruitland. However, many of the studies were based on large samples which were considered representative of the community. Inferences from such samples can probably be used, with caution, to make statements about Fruitland as a whole. This summary will present a brief overview of the Fruitland community derived from information in a number of publications presenting the findings of the Cornell group.

"The community was not homogeneous" (Sasaki 1960:84), and "From the start of the Fruitland Project, different groups of Fruitlanders have oriented themselves to social forces in slightly different ways" (Sasaki 1960:84). Unit 2 was the smallest and its social and political attributes most closely resembled those of "ancient Navaho tradition" (Sasaki 1960:57, 61). Unit 3 was also small but was the most poorly organized unit. Unit 1 was much larger than either of the other two. Although originally settled by a few families, Unit 1 easily absorbed newcomers who eventually came to account for about 60 percent of its population (Sasaki 1960:57, 64-65).

A large canal system was constructed at Fruitland during the period of stock reduction in the mid-1930s. Before this construction, the economy of Fruitland had been largely pastoral. After stock reduction, many of the approximately 200 residents of Fruitland were away part of the year employed on wage labor jobs.

The first land assignments on the Fruitland Project were made in 1936. The parcels were quite small and most families had to supplement their farm incomes with seasonal wage work (Sasaki 1960:43, 86). In 1950, many jobs became available locally due to the exploitation of nearby natural resources by large-scale private enterprise.

Demography

By 1950, the Fruitland Irrigation Project encompassed 2,500 acres divided into 205 farms held by 191 family units. In all, about 200 families lived at Fruitland. A few families did not have farms. Table 14.1 shows the number of farm families in 1949 and the population distribution in 1954 by unit. Unfortunately, data on both variables are not available for the same year.

Family size[1] was almost certainly between 5 and 6 members. The best estimate can be calculated in the following manner. In 1950 there were about 200 families in Fruitland (Sasaki 1960:5). In the same year there were 380 families in District 13 (Sasaki 1960:100) which included Fruitland. Thus, Fruitland families accounted for slightly over half of all District 13 families. Sasaki (1960:100) also gave the number of Fruitland families from 1944 through 1952. From 1947 to 1952, new families were created at a rate of about 10 per year. If this rate were constant (which it was not) and if new families were distributed proportionately throughout the District (for which there is no evidence) then in 1954 there should have been about 220 families in Fruitland and the average family size would have been 5.4. This figure is only a reasonable guess, but it will be used as the best available estimate.

An age-sex profile for about two-thirds of the population was constructed by Sasaki (1960:7) but the sample of the population used does not appear to correspond to the total population. Sasaki showed that females under 19 years of age outnumbered males, whereas Ross's figures (displayed in Table 14.1) show that male children significantly outnumbered female children ($x^2 = 7.54$, p = less than 0.01).

Some attributes of the adult, presumably male, population are reported for a one-third sample (N was 72) of family heads by Tremblay et al. (1954). Most of the family heads (60 percent) were between the ages of 30 and 49; 20 percent were between 50 and 60; and 15 percent were 60 or more; only 4 percent were 20 to 30 years of age (Tremblay et al. 1954:207). Over half of these family heads had never been to school and a third had 6 or more years of formal education. None had more than 10 years (Tremblay et al. 1954:211). Interestingly, almost a sixth (11) were veterans of World War II (Tremblay et al. 1954:212). Only 25 to 46 percent of the adult males had some command of English (Streib 1952:23; Tremblay et al. 1954: 213).

Social Organization

The small farm plots on the Fruitland Project were assigned to male family heads. Nuclear family units were emphasized, therefore, in farm assignments. Ross (1955:123-127) found this emphasis

Table 14.1: Population Characteristics in Fruitland

	1949	1954 Population				
		Adults		Children		
Land Unit	Families Owning Farms	Male	Female	Male	Female	Total
1	115	95	111	171	151	528
2	34	54	65	69	83	271
3	42	74	76	150	83	383
Total	191	223	252	390	317	1,182

Source: Data from Sasaki (1960:5, 57) and Ross (1953:3, 193) reflected in the residence patterns in Fruitland. In a sample of 156 families, 65 percent were neolocal, 20 percent matrilocal, 13 percent patrilocal, and 3 percent were classed as living with "other" relatives. However, he also found that 54 of the husbands and 60 of the wives, among the 101 neolocal families, had one or more parents resident on the project. Ten of the men, but none of the women, lived on plots adjacent to those of their parents, and 43 women and 35 men lived in the same Units as did their parents. Prior to 1950 the Fruitland community was composed of "extended-family groups" (Sasaki 1960: 31). Apparently, these groups were not necessarily made up of coresident households, possibly because the size of the farms was small. Ross found a positive correlation between neolocal residence and subsistence farming. There was a higher proportion of wage workers among patrilocal and matrilocal residence groups. He concluded that this could "be explained in part by the fact that a ten-acre farm will not support an extended family, and in part by the pattern of land allocation" (Ross 1955:125).

In an intensive study of 36 households (all but 3 households were in Unit 2), Shukry (1954) reported residence patterns which were not in full agreement with Ross's study. While half the sample lived neolocally in independent nuclear households, the other 18 households were grouped into 5 extended families (Hamamsy 1957:105). Twelve of the 13 junior families lived with the husband's parents. Shukry's sample included nearly every Unit 2 family (Shukry 1954:121; Sasaki 1960: 57). If Ross's figures on residence can be extended to all of Fruitland, it would appear that Unit 2 accounted for almost half of all the cases of patrilocality in the community, although its population was smallest of the 3 Units. Unit 2 was considered the most cohesive, affluent, and traditional of the Units (Sasaki 1960:61-64; Shukry 1954:118). The prevalence of patrilocality found in Unit 2 is of interest because Navajos are considered to have a high incidence of matrilocality and matrilocal residence is often considered to be evidence of a more traditional pattern of social organization. The result for Unit 2 may mean that Navajos are not as matrilocal as is often claimed. On the other hand, Sasaki may not have used standard criteria to measure "traditional" characteristics.

The "outfit" was a unit in the Fruitland social structure which included several extended family groups. Sasaki (1960:61-62) noted that nearly all of the long term residents of Unit 2 were members of one of two outfits. One of the outfits consisted of about 50 members, 8 of whom held farm assignments (Sasaki 1960:60). A group which appears to have been another outfit in Unit 2 controlled 11 farm assignments (Sasaki 1960:153). Ross (1955: 138-144) offered the most complete description of an outfit. The outfit consisted of 48 adults and 70 children, 10 percent of Fruitland's total population. The members were divided into 22 nuclear families living in 20 separate hogans and 14 separate hogan clusters, i.e., camps, although Ross referred to these as "households." Prior to stock reduction, the outfit had cooperated in large-scale sheep ranching. Thirteen members held permits in the early 1950s, but only 233 sheep units were permitted for the whole group. Cooperative links were still maintained, but were of reduced intensity and centered mostly around farm work.

Ross (1955:112-113) described the nature and function of clans, clan groups, local clan segments, and lineages in Fruitland. There were 147 local clan segments in Fruitland. These segments were defined as lineages or resident segments of lineages which could not trace direct consanguineal links to other such groups in the community. A third of these segments consisted of a single lineage and 47 consisted solely of males, mostly men marrying in from other areas (Ross 1955: 119). The number of lineages per local clan segment ranged from 1 to 16. Lineages averaged 8 members but some lineages were represented in the community by only one member. The largest lineage was composed of 69 individuals (Ross 1955:119-120). Table 14.2 gives the distribution of the population into the 27 clans represented in Fruitland. There was some localization of clans as 2 clans accounted for 25 percent and 5 clans for 50 percent of the population. Had each of the 3 Fruitland Units been tabulated separately, more concentration of membership in a few clans might have been observed.

Economics

The Fruitland Navajos depended on livestock, farming, wage work, and some welfare for their subsistence. "Sheep and dry farming constituted the Navahos' main sources of subsistence until the 1930's" (Sasaki 1960:21). With livestock reduction and the initiation of the Fruitland Project, however, the importance of livestock declined. Sasaki (1960:100) documented the decline of sheep-raising activities in Land Management District 13 from 1944 to 1952. The proportion of families owning sheep declined as did the size of the flocks. In 1951 the number of sheep in Land Management District 13 was equal to half of the carrying capacity.

Table 14.3 shows that changes in Fruitland were similar to those occurring in the rest of District 13. In 1949, 43 percent of all families owned stock, 2 years later only 34 percent had stock, and by 1954 less than 30 percent had stock (Ross 1955:109). Moreover, Sasaki (1960: 33) discovered that Fruitland residents kept only about 61 percent of the stock permitted.

Unit 2 families had a greater total number of sheep, and 80 percent of Unit 2 families owned some stock. Only 33 percent of Unit 1 families and 50 percent of Unit 3 families had stock. There was also a tendency for families with more sheep to have more farmland (Sasaki 1960:33).

Apparently sheep were mainly important for home use rather than the market. Sasaki (1960:33) reported that only 17 owners, those with over 100 sheep, could make a profit.

Farms, like livestock, were primarily important for production for home use, although cash crops became increasingly popular in the early 1950s. Table 14.4 summarizes data on farm size and income estimates. These income figures (derived from agricultural service estimates of the value of an acre) were universally disputed by farmers as being too high (Shukry 1954:99). While Shukry's (1954:94) figures showed that 30 percent of all families had gross incomes of over $1,000 in 1950-1951, Sasaki (1960:99-100) showed that only 14 percent grossed over $1,000 in both 1949 and 1952. Net profits, of course, were considerably less. Alfalfa was the major crop in 1952, occupying 43

Table 14.2: Clan Membership in Fruitland

Clan	Total Members
'Ashiihi (Salt)	175
Todich'iinii (Bitter Water)	126
Nakaii dine'e (Mexican Clan)	116
Tachii 'nii (Red Streak)	108
Tłaaschi'i (Red Streak Under House)	95
Ta'neeszahnii (Hogan on Rock)	87
Naneesht'ezhi (Zuni Clan)	65
Bit'ahnii (Folded Arms)	65
Hashtłishnii (Mud)	57
To'aaheedlinii (Two Streams Meet)	49
Hooghahłani (Many Huts)	43
Tse nahbiłnii (Rock Ready To Fall)	43
Kiyaa'aanii (Standing House)	28
Tłizidachii (Red Goats)	27
Naashashi (Bear People)	23
Tł'iziłani (Many Goats)	14
Nooda'dine'e (Ute Clan)	13
Kinlichii'nii (Red House)	9
Ma'ii deeshgiizhnii (Jemez Clan)	8
Tsin sikaadnii (Lone Tree)	7
Tse njikini (Black House)	6
Tabaaha (Edgewater)	6
Nahoobaanii (Light Colored Soil)	5
Honaghaanii (He Walks Around)	4
To'ahani (Near the Water)	1
Totshonii (Big Water)	1
To baazhni'azhi (Two Went for Water)	1
Total	1,182

Source: Data from Ross (1955:113)

Table 14.3: Livestock Ownership in Fruitland

	Families			
	1948-1949		1950-1951	
Number of Sheep	Number	Percent Owning Sheep	Number	Percent Owning Sheep
0	109	57	132	66
1-50	20	10	48	24
51-100	45	24	13	6
100 or more	17	9	8	4
Total	191	100	201	100

Source: Data from Sasaki (1960:33) and Shukry (1954:102)

Table 14.4: Distribution of Farm Sizes and Estimated Farm Income in Fruitland

	Number of Family Units		Estimated Mean Income[a]
Number of Acres	1948	1950/51	1950/51
1-5	6	1	$ 304
6-10	93	81	571
11-15	50	59	810
16-20	29	34	1,107
21-25	7	17	1,420
over 25	3	9	1,774
Total	188[b]	201	
Mean			$ 856

[a] agricultural service estimates gave an average of $60.80 income from one acre

[b] three Navajos held joint assignments

Source: Data from Sasaki (1960:44) and Shukry (1954:94) percent of all cultivated land. The net profit, under $30 per acre, was only half the gross profit.

Since farms and sheep provided only the most minimal subsistence, "all members of the community were driven to supplement their farm income with wage work" (Sasaki 1960:86). "Only wage work and, in 1950, predominantly wage work away from home brought significant cash income to the Navaho for whom farming provided an inadequate livelihood" (Sasaki 1960:48).

During the winter of 1950, all but 30 or 40 families left Fruitland, either to obtain wage work or to stay in sheep camps south of the Fruitland Project (Sasaki 1960:6). Most off-Reservation wage work was seasonal. Corporate farms were the largest employers - about two-thirds of all Fruitland adults worked in the Colorado bean fields in the autumn of a normal year. The railroad also employed many Fruitland men, and some worked in the Colorado mines (Sasaki 1960:6, 46). Before 1950 only a few Fruitlanders could find jobs in the immediate vicinity. Fewer than 12 had full-time wage jobs locally but a few more gained occasional employment in the area. In addition, two farmers had small coal mining operations near Fruitland (Sasaki 1960:48).

Since seasonal work was unsteady, the income derived from this source was unstable though uniformly low. For example, Sasaki (1960:47) analyzed a sample of 28 men employed by the railroad. There was a wide variation in time on the job, and the wages taken home that year by these individuals varied from less than $200 to over $2,000.

After 1950, the economy of the Fruitland Navajo underwent a dramatic transformation as big business moved into northwestern New Mexico to exploit its natural resources. From 1950 through 1951, the El Paso Natural Gas Company hired over 300 Navajos as laborers on a new pipeline (Sasaki 1960:95). The fact that the company paid less than a union wage (Streib 1952:24) was not a deterent to Fruitland farmers struggling for a bare subsistence. At first the company did not hire many Fruitland Navajo, but after the union began organizing activities in Fruitland, the company increased the rate of hiring (Streib 1952:26). By 1951, over 80 Fruitland men, including all able-bodied men from Unit 2, had been hired by the company (Sasaki 1960:89, 95). As pipeline work decreased, other opportunities for wage work appeared and Fruitland became a community largely dependent upon and oriented towards wage work (Sasaki 1960:89).

Tables 14.5 and 14.6 present data for the period of 1951 to 1952 on the occupation and income of 68 family heads in Fruitland. About one-third of all family heads were represented in the sample, which, though not randomly drawn, was believed by the researchers to be representative of the entire community (Tremblay et al. 1954:193-194). If the findings were representative of the community, then the average family income for Fruitlanders was about $2,738. Average annual per capita income would have been about $500, slightly higher than the $450 estimated for the entire Tribe in 1955.

Unearned income was important for some Fruitland families without sheep or farms. "About 10 percent of Fruitland families received partial or total aid in 1953" (Sasaki 1960:101). Interviews with most (15) of these families revealed that monthly income from this source amounted

Table 14.5: Annual Income in Fruitland, 1951-1952

Income (dollars)	Family Heads
0-499	1
500-999	4
1,000-1,499	5
1,500-1,999	2
2,000-2,499	7
2,500-2,999	20
3,000-3,499	18
3,500-3,999	7
4,000-4,499	3
6,000	1
Total	68

Source: Data from Tremblay et al. (1954:210)

to an average of about $57 and ranged from $9.50 to $120.00 per month (Sasaki 1960: 101).

The tremendous increase in cash income after 1950 was accompanied by changing consumption patterns. A random sample of 33 wage workers showed that about 43 percent of income was spent "at the trading post on foodstuffs, gas and oil, and clothing" (Sasaki 1960:101). But other items were also important. Shukry wrote that "cars and liquor figure largely in reports of consumption habits of Navaho men" (Shukry 1954:166). Indeed, the number of motor vehicles owned by Fruitlanders increased from 10 in 1950 to 150 in 1952 (Sasaki 1960:102). "Almost every extended family had either its own car or

Table 14.6: Average Annual Income by Occupation in Fruitland, 1951 to 1952

Occupation	Number Family Heads	Average Annual Income
Agricultural		
Full-time farmers	9	$ 1,528
Full-time farmer-stockmen	3	2,750
Full-time stockmen-farmers	4	3,500
Seasonal agricultural workers	6	1,833
Non-agricultural		
El Paso Natural Gas Company workers	2	3,250
Pipeline construction	18	3,027
Construction	9	2,917
Federal and Tribal employees	10	3,275
Railroad and mine workers	3	2,583
Clerical and service workers	4	2,854
Total	68	

Source: Data from Tremblay et al. (1954:210) its own pick-up truck" (Tremblay et al. 1954:190).

Conclusion

The changing pattern of economic activities is the best documented result of Cornell's Southwest Project studies of Fruitland. The economic changes are clearly seen as the result of forces outside the community: the livestock reduction, the irrigation system, and the exploitation by big business of natural resources in the vicinity. The changing economic and social patterns which emerge from the Fruitland studies are certainly relevant to understanding aspects of "development" (planned or unplanned) on the Navajo Reservation.

There are, however, some disappointing gaps in the major works on Fruitland. While the community was universally considered as "transitional" or "changing," there was inadequate time control on many key variables. Different researchers, approaching similar problems, used different variables or measures with little regard for what other researchers had done. Some seemingly very basic demographic and social data were not presented. For instance, both the number of families and the number of people in the area were given, but the information pertains to different years. The figures necessary to find household and family size are missing. While quantitative data were analyzed for such elements of the social organization as clans and lineages, there was little information provided about "outfits" or extended families, and virtually no data about the households. These problems limit the usefulness of the studies of Fruitland in comparing this transitional community with other communities of Navajo. Yet criticism of the Cornell Project must be tempered by noting that several fine topical works were produced and that description of the community was not its only goal.

Footnote:

[1] The lack of data for both population and family numbers in any single year presents an insurmountable obstacle in calculating average family size in Fruitland. However, one can attempt to estimate family size by various means. "In 1949 there were 115 families in Unit I, 34 in Unit II and 42 in Unit III" (Sasaki 1960:57). Sasaki's Table 1 showed the population distribution by Unit 5 years later. Unfortunately, there was no precise estimate of the number of families present in Fruitland in the summer of 1954 when the census was taken (Ross 1955:3). If one assumes only 200 families, then the average family would have been comprised of about 6 members (5.9). But there must certainly have been more families in Fruitland in 1954 than there were 4 years earlier. Thus, while average family size cannot be computed precisely, it must have been somewhat less than 5.9; just how much less is not known. Furthermore, if 1949 figures for the number of families per unit are used in conjunction with 1955 population figures, huge differences in hypothetical "family" size result. On the other hand, if one divides the number of adults by 2 (to obtain a very gross estimate of the number of families--one assumes most adults to be or to have been married and hence to form independent families) and then divides the figure gained into the total number of people per unit, the hypothetical "family" sizes are much more uniform. This second figure is probably too low. Calculating average family size exactly is not possible but the figure must be between about 5 and 6 members per average family. It is unfortunate that figures on population and number of families were not reported for the same years.

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15. MANY FARMS, 1958-1961

The opening of the Cornell-Many Farms Clinic in May 1956 marked the beginning of several years of study in the area. The Navajo populations in an area around the communities of Many Farms, Rough Rock, Valley Store, and Black Mountain were included in the Cornell Project study (McDermott et al. 1957; Sasaki 1964:34). Good demographic data were collected throughout the period of clinic operation (Loughlin and Dennison 1961). An economic survey was conducted during the summers of 1958 through 1961 (Sasaki 1961; 1964). A census, taken in April 1958, was inexplicably at variance with clinic population registers for the area. It did, however, provide data for a study of residence patterns by Richards (1963).

Population

The area covered was about 800 square miles (Richards 1963:25) and was divided into 34 units, each about 25 square miles, though often less in fringe areas (Loughlin and Dennison 1961:115). For this period the density seems to have been about 3 persons per square mile for the total area. The population was, however, unevenly distributed. The most sparsely settled areas around Black Mountain had a density of less than 1 person per square mile. The densest unit with 12 to 13 people per square mile lay in the valley (Loughlin and Dennison 1961:115; Sasaki 1964:34). Sasaki summarized the situation as follows:

> The population consists of about 2300 persons with the major concentration of three to five hundred, varying with the season, living in the irrigated valley. The remainder is scattered throughout the countryside in clusters of families, termed camps, of which there is a total of 143 (Sasaki 1964:34).

He added that "while Navajos may maintain several residences, a winter and as many as several summer camps, there has been a steady movement of families into the valley" (Sasaki 1964:37).

The population figures for the period given in Table 15.1 show a steady increase. The reason for the discrepancy between the 1958 census and the ongoing Field Health Research Project figures is not clear.

The Health Project figure is reinforced by McDermott et al. (1960:200) who claimed a population of 2,048 for the area on January 1, 1957. However, social and economic studies have generally utilized the census estimates.

Over a 3-year period, McDermott et al. (1960:201) reported a growth rate of 4 percent. Using the formula given by Barclay (1958:28-33) for figuring annual population growth rates, an overall growth rate of about 4.6 percent per year has been calculated for the 5-year period. If only the number of births and the number of deaths are taken into account, then the annual "natural" population increase for the 5 years was 4.2 percent. The overall increase over 5 years was 20.15 percent. All these calculations are based on the Health Project figures.

A high birth rate of 49.5 per 1,000 population per year was reported. This was largely due to a high proportion (19 percent) of women between 15 and 45 years of age. The fertility rate of 228.6 births per 1,000 women aged 15 to 45 is also quite high (Loughlin and Dennison 1961:119).

The 1958 census revealed a population with an age-sex profile "comparable" to that of the total Reservation with the exception of "a few more older people and a smaller number of men in the 35-39 year-old age group" (Deuschle et al. 1958:43). Table 15.2 compares the age groups of the late 1959 Project population with those of the total Reservation population.

Table 15.1: Population at Many Farms, 1955-1960

Year	Field Health Project	Census
1955	1,830	--
1956	1,895	--
1957	1,942	--
1958	2,047	2,371
1959	2,126	--
1960	2,292	--

Source: Data from Loughlin and Dennison (1961:116) and Deuschle et al. (1958:43)

The population of the Many Farms area can be characterized as predominantly young, rapidly expanding, and unevenly dispersed over the land in terms of settlement densities.

It should be noted that 4 "camps" (2.8 percent) included in the area population served by the clinic consisted entirely of non-Indians. This is a relatively small percentage but its inclusion is worthy of mention (Richards 1963:27).

Social Structure

The major units of Navajo social organization used for analysis by the Cornell workers was the camp. Richards (1963:26) stated that the term "camp" referred to a residence cluster of from one to several households of an extended family, living "within shouting distance" of one another and geographically or socially isolated from neighboring residence clusters. Richards (1963:27) reported 141 camps (4 of which were non-Indian camps) for the area, apparently based on the 1958 census. Sasaki (1964:34) counted 143 camps for the same period. Using the census population, the average camp size in 1958 can be calculated to be almost 16.6 people per camp. However, using the Health Project population figure, the number of persons per camp would be about 14.3.

Another set of figures were reported from the January 1960 population registers which showed 148 camps, "406 individual family hogans and a total of 2292 persons" (Loughlin and

Dennison 1961:114). This gives a mean of 15.5 persons per camp. Adair (1963:242), using the same population base, noted only 140 camps and 354 "families" and hence 16.37 persons per camp (closer to the figures of Sasaki and Richards). It would seem that the consensus gives an average camp size of about 16.5 people per camp.

Unfortunately, the ranges of camp size are not to be found in any of the reports, and information on the nature of social organization above the camp level was not given.

The 1960 figures also show an average household size ("individual family hogan") of between 5.6 and 6.5 persons with between 2.53 and 2.74 hogans (families) per camp as an average. These figures for the number of hogans per camp gain some support from Richards' (1963) figures from which can be calculated the average number of married couples per camp (2.36). Since cases of divorce and marriages broken by death were not included, there would seem to be some consistency between the two sets of data. Again, it is only possible to calculate means. Data for finding other statistical measures are not available.

Residence patterns for 323 unbroken marriages in the 137 Indian camps were analyzed by Richards and are summarized in Table 15.3. Richards' evidence indicates the utility of the concept of the "developmental cycle in domestic groups." Eighty-three percent (73 cases) of the "neolocal" couples were "of the older parental generation." Of the remaining 15, who were "too young to have married offspring," 14 lived in the clinic or school compounds (Richards 1963:28). The general pattern of camp formation is summarized in Richards' (1963:28) statement that "when parents are deceased, if not before, siblings scatter to head their own residence units composed of their offspring and offspring's families."

Table 15.2: Population by Age and Sex in Percent

Age (Years)	1961 Total Reservation	1959 Many Farms Area
0-5	16.04	19.82
6-14	29.99	28.61
15-19	10.60	10.20
20-24	9.52	7.99
25-44	21.45	20.22
45-59	7.77	7.51
60+	4.61	5.65
Total	99.98 (N = 93,357)	100.00 (N = 2,265)

Source: Data from Young (1961:326)

Economics

Sasaki conducted an economic survey of the Many Farms area for the 1959 fiscal year.

> Data for this study were obtained from many sources on 809 persons fourteen years of age and over who live in the clinic area and who visited the clinic at least once (Sasaki 1961:104).

The sample cannot be considered random and "does not necessarily represent the population" of the area (Sasaki 1961:105). But it is large (well over 60 percent of the population over age 14).

Table 15.4 shows some very low income figures. In accordance with the population profile at Many Farms, the 809 individuals over 14 years of age for whom Sasaki gathered economic data represented nearly 70 percent of the population over 14 years of age who were served by the clinic at the time of Sasaki's study (Young 1959:116, 326). Seventy percent of the total population would be about 1,500 persons. This last figure was used in conjunction with the figure for the total earnings of the 809 people in Sasaki's sample to obtain a crude approximation of per capita income at Many Farms in 1959. Per capita income was thus calculated to have been about $140 in fiscal 1959. Family income was probably about $600 a year (cf. Sasaki 1961:103, 111). These figures are disturbingly low. Even the average for those individuals who had a source of income was less than $400 per year. Either Sasaki's returns were incomplete or this area was very much poorer than most other Navajo communities. Sasaki (1961:103) stated that "earned and unearned incomes for the 354 families included in this report appear to be far lower than that for the Navajo Reservation as a whole..." because of a recent drought, a cut-back in employment by the railroads (which hired many Navajos seasonally in the mid-1950s), and completion of nearby construction projects. Home consumption does not seem to have been of great importance. Irrigation of 1,600 acres was "of little significance to the total economy of the Many Farms area" (Sasaki 1961:109). In another paper, Sasaki (1964:37) showed that the average farm holding of 64 farmers was about 10 acres. Livestock holdings were examined for a sample of 312 people. Only 14.4 percent owned any livestock and only 6 of 45 stock owners had flocks larger than 100 head. "As for surplus foods, a total of 221 persons received packages for 904 individuals" (Sasaki 1961:112). Thus a good deal of subsistence is not easily

Table 15.3: Residence of Couples in the Many Farms Area

Type[a]	Cases	Percent
Matrilocal	156	48.3
Neolocal	88	27.3
Patrilocal	67	20.7
Other	12	3.7
Total	323	100.0

[a] Matrilocal - couple residing in the same camp as wife's parents or parent.

Neolocal - couple residing alone or with offspring, parents living or deceased.

Patrilocal - couple residing in the same camp as husband's parents or parent.

Other - polygynous marriages (6) and other unusual patterns.

Source: Data from Richards (1963:25-26)

quantified in income terms. More important, however, is the likelihood that Sasaki's data were incomplete. This is a possible explanation for such low per capita income figures.

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Table 15.4: Income by Source at Many Farms for Fiscal Year 1959

Source	Number Employed	Total Earnings	Percent
Earned Income			
Clinic and BIA employees	14	$ 48,300	23
Railroad	26	34,000	16
Migratory agriculture	146	32,800	15
Reservation agriculture	12	30,777	14
Tribal works projects	190	14,448	7
Livestock	23	13,000	6
Forest fire-fighting	26	2,600	1
Total	437	$175,925	82
Unearned Income			
Old age assistance (state)	24	15,400	7
ADC (state)	8	7,500	3.5
General assistance (BIA)	10	3,320	1.5
Tribal welfare	81	12,379	6
Total	123	$ 38,599	18.0
Grand Total	560	$214,524	100.0

Source: Data from Sasaki (1961:111) and Sasaki and Basehart (1961-62:188)

McDermott, Walsh, et al.
1960 "Introducing Modern Medicine in an Navajo Community." *Science* 131:197-205;280-287.

Richards, Cara E.
1963 "Modern Residence Patterns Among the Navajo." *El Palacio* 70:25-33.

Sasaki, Tom T.
1961 "Socioeconomic Survey of the Many Farms and Rough Rock Navajos." In *The Navajo Yearbook*, Robert W. Young, ed. Report VIII, pp. 103-113.
1964 "Changes in Land Use Among the Navajo Indians in the Many Farms Area of the Navajo Reservation." In *Indian and Spanish American Adjustments to Arid and Semiarid Environments*, Clark S. Knowlton, ed. Lubbock: Texas Technological College.

Sasaki, Tom T., and Harry W. Basehart
1961-62 "Sources of Income Among Many Farms-Rough Rock Navajo and Jicarilla Apache: Some Comparisons and Comments." *Human Organization* 20:187-190.

16. SHEEP SPRINGS, 1965-1966

In 1965 and 1966, Lamphere studied Sheep Springs (referred to in her work as Copper Canyon) which is a community north of Gallup, New Mexico. The community area defined by Lamphere is not precisely equivalent to the Sheep Springs Chapter. Approximately 752 residents of the community were identified as well as 242 nonresident members (Lamphere 1971:123).

The Sheep Springs population was distributed among 144 households comprising 78 camps, yielding a mean average household size of 5.22 persons and an average camp size of 9.66 (range 1-30). Households consisted of nuclear families in most instances (76 percent). Attenuated nuclear families, consisting of a single parent with children, accounted for 12.5 percent and single adults accounted for another 7.6 percent of all households.

Forty-two percent of the camps were single nuclear families and 28 percent were uxorilocal. The camp composition profile is essentially the same as that found for Ramah in 1964 (see Table 16.1).

Some economic data were obtained from the local trader and were provided for 65 camps (population 600) (see Table 16.2). The total community income was estimated to be $214,653, yielding a mean annual per capita income of $357.75.

The settlement depicted in Lamphere's winter residence map is approximately 16 square miles in area and is located near U.S. Route 666. The population density of this area was about 47 people per square mile, or 4.88 camps per square mile. This is quite a bit higher than that for the western end of the Reservation. The population density for the Navajo Tribe was about 3.0 to 3.5 persons per square mile in the early 1960s (U.S. Dept. of the Interior, BIA 1960:5; 1963:11).

There were a number of differences in specific social and economic characteristics at Sheep Springs compared to western Navajo Reservation communities. Only the Leche-e Grazing District and South Tuba City had camp sizes similar to that found in Sheep Springs. On the other hand, while the per capita income of

Table 16.1: Camp Composition[a] of Sheep Springs (1965-1966) and Ramah (1964)

	Ramah		Sheep Springs		Sheep Springs			
					Range	Individuals		Persons per camp
Camp	Number	Percent	Number	Percent		Number	Percent	
Nuclear	49	46	33	42	2-16	220	29	6.66
Isolated individuals	3	3	5	6	1	5	1	1.00
Extended								
Uxorilocal	32	29	23	28	3-21	241	32	10.90
Virilocal	7	7	6	8	4-19	54	7	9.00
Mixed	10	9	12	15	11-30	234	31	19.50
Affinal	5	5	--	--	--	--	--	--
Total	106	99	78	99	1-30	754	100	

[a] percents rounded to nearest whole percent

Source: Data from Lamphere (1971:371, 377) the Sheep Springs community approximated that for the pastoral communities of Navajo Mountain, Red Lake, and Leche-e Grazing District, the proportion of income derived from livestock was different: only 7 percent in Sheep Springs, 38 percent at Navajo Mountain, and about 25 percent at Red Lake. This difference in the relative dependence on various sources of income may have influenced settlement patterns, camp size, population density, and cooperation patterns. In addition, the history of contact with the Spanish and Anglos in the eastern end of the Reservation has been somewhat more intense for a longer period of time. Such factors should be taken into account when comparisons of eastern and western communities are made.

Lamphere's major purpose was to analyze the working of the kinship system. In this regard, her work is outstanding and provides us with a detailed and accurate analysis of social organization among contemporary Navajos.

Reference:

Lamphere, Louise
1971 To Run After Them: The Cultural and Social Bases of Cooperation in a Navajo Community. Manuscript. (Submitted to University of Arizona Press)

Table 16.2: Sources of Income at Sheep Springs, 1965-1966

Source of Income	Camps with Some Income from Source	Percent
Livestock	43	7.4
Weaving	41	6.7
Welfare	42	24.2
Wage (railroad and other sources)	50?	50.7
Tribal Works Project and shallow wells	-	10.9
Total	65	99.9

Source: Data from Lamphere (1971:33-38)

17. RESEARCH COMMUNITY
1966-1967

From January 1966 through August 1967, Pearson (1969) carried out a study in a community on the eastern end of the Navajo Reservation not far from Gallup, New Mexico. He called this community "Research Community" to provide anonymity (1969:24).

Pearson (1969:25) used three criteria: "spatial identity," "kinship group recognition," and "the awareness of a sense of belonging" to delimit the community. These were measured by two methods: asking the respondent to indicate which names on a list of residents in the area he considered to be community members, and asking informants to draw the boundaries of the community on a map.

The "community" covered about 130 square miles, but only 485 of about 600 people living within that territory were considered to be members of that community (Pearson 1969:25, 32-33). Pearson noted that there was some disagreement about the community boundaries among the informants but claimed that "the actual number of people and dwellings involved in this disagreement was small - not more than fifty people and six dwellings - but large enough to prevent complete accuracy in the description" (Pearson 1969:33). Thus there was disagreement among informants over the inclusion of about 10 percent of the members of the community. Pearson also noted that the community territory was not consistent with natural barriers. Thus, although the "research community" was "a community according to the Navajo concept" (Pearson 1969:24), it had unclear limits and a somewhat vague membership.

The community members were unequally distributed in adjacent parts of three Chapters, more than half of them apparently belonging to one Chapter. Despite the fact that the community overlapped parts of three Chapters, most of Pearson's interest in local politics focused on one Chapter in which community members were dominant. The population density of the 130-square-mile area was about 4.6 individuals per square mile, if non-community members residing in that territory are included.

Demography

In addition to the problems in definition of the community, there are other uncertainties in Pearson's data. The demographic and economic data were gathered largely from key informants rather than through a community-wide survey. Pearson was quite candid about the limitations of this approach, stating that data on the age-sex breakdown (presented in Table 17.1) suggested "an unrealistic precision

Table 17.1: Population by Age and Sex, Research Community, 1966-1967

Age Categories (Years)	Male	Female	Total
0-4	54	70	124
5-14	58	71	129
15-24	33	52	85
25-34	24	20	44
35-44	13	21	34
45-54	15	16	31
55-64	11	15	26
65+	3	9	12
Total	211	274	485

Source: Data from Pearson (1969:38)

although they [the data] are generally accurate" (Pearson 1969:38).

Another problem is that Table 17.1, derived from Pearson's data, represents not a single enumeration but a generalized population profile for the total 20-month period. During this time there were 21 births, 7 deaths, 7 "new residents," and 28 "reportedly permanent moves of persons away from the locality" (Pearson 1969:40). Apparently data for all 63 of these individuals are included in Table 17.1. These data indicate that about 13 percent of the population did not live in the community throughout the 20-month span. Furthermore, about 20 percent of children between the ages of 5 and 14 were in boarding school and about 40 percent in the 15 to 24 age group were "absent during part of the year" (Pearson 1969:41).

The two major demographic features of interest are (1) the relatively high proportion of females (56 percent) and (2) the relatively low proportion of those aged 20 to 30. Pearson suggested that, "These two facts seem to be related to the wage work orientation of the group. The jobs tend to pull the younger adults, particularly males, away from the community" (Pearson 1969:40). This explanation of the skewed age-sex profile, while probably correct, does not reveal why there were actually more 25 to 34 year-old males (logically a prime wage-working group) than females, while females were much more numerous than males in both adjacent age categories. Also it does not explain why nearly half of the imbalance in sex ratio is due to a prevalence of females over males in the under 15 years of age category.

The population fluctuations during the 20-month fieldwork period showed a net population decline of 7 individuals. Younger adults, especially, were moving away to find a livelihood and were not expected to return (Pearson 1969:40).

Economics

Three major economic activities contributed to the subsistence of families in the community: wage labor, farming, and livestock raising. "Textile work was practiced only to a limited extent" and there had been "no silverworkers in the community" for the last 10 years (Pearson) 1969:58).

"The subsistence base of the research community is wage work and the majority of community residents are dependent on wages for their income" (Pearson 1969:59, 128). Fifty-three of the 175 resident adults, aged 15 to 64, had full-time employment. Seventeen were employed part-time. Thus, about 40 percent of all adults living in the community had some type of wage labor job. Table 17.2, slightly modified from Pearson's Table 2, gives a breakdown of wage work employment. "The income figures in Table 2 are totals of reports and estimates given by informants...there is no claim in [the] table for complete accuracy" (Pearson 1969:60).

The figures in Tables 17.1 and 17.2 yield a per capita income from wages earned by community residents equal to $596. However, since neither Table is precise and Pearson's text reveals that all 485 people were probably not resident in the community at any one time, it is clear that the per capita income level from wages of $596 is a very rough estimate and may even be slightly low.

Pearson's information on horticulture and livestock is less informative.

"Livestock was not an important element in the production activity of the community" according to Pearson (1969:57). Figures for flock size per family were not given, but most families with grazing permits (number unspecified) had permit allowances for less than 100 sheep units, and most flocks were smaller than permit allowances. Three families had large permits, but only two of the permits, each allowing 300 sheep units, were used. Thirteen dollars was given as the value of a sheep unit by informants. "Sheepherding, for most families, was done on a part-time basis with the income from sheep being secondary to that gained from wage work" (Pearson 1969: 57). Unfortunately, we cannot estimate the extent to which income from livestock supplemented wage work, and hence raised per capita income in the community.

Farming may have been slightly more important than livestock in terms of community subsistence. Ten family units were primarily dependent on farming activities for their subsistence. These units represented 19 percent of the number of full-time wage-earning individuals. Two of these latter persons "supplemented" their farm activities with wage work (Pearson 1969:55).

Farms were small. The largest farm, 50 acres, supported 19 people, and the nuclear family with the largest plot had a 30-acre farm. Pearson did not report the sizes of other farms. The yields from farms were low and informants varied greatly in their estimates of the average cash income a farmer could expect from an acre. A mean of $60 per acre was cited by Pearson as "perhaps reasonable" (Pearson 1969:55-57). Unfortunately, since the total acreage under cultivation in 1966 was not given, we can estimate neither the average farm size nor the extent to which farm income would raise the figure for per capita income in the community.

Pearson (1969:60) thought that the average per capita income was about the same as that of the Tribe as a whole. However, as has been shown above, he only calculated a figure based on wage income and discounted the apparently important, though secondary, sources of farming,

Table 17.2: Wage Work Employment, Research Community, 1966-1967

Source	Number Employed	Estimated Total Wages	Mean Yearly Wages
Tribal programs, full-time	25	$137,500	$5,500
part-time	10	15,000	1,500
Federal programs, full-time	20	100,000	5,000
Private business and industry,			
full-time	8	32,000	4,000
part-time	7	4,500	643
Total	70	$289,000	$4,129

Source: Data from Pearson (1969:60)

livestock, and weaving. In addition Pearson did not even discuss welfare or other unearned income that members of the community may have received in 1966. Thus, the assertion that the per capita income in the community was "average" for the Navajo Tribe should be treated with considerable caution. Actually this community in the southeastern part of the Reservation may very well have been more "affluent" than the average community.

Social Organization

Pearson did not provide much information on the family structure or on certain other aspects of community organization in his study area. However, some inferences can be made based on the data he did provide. In the territory he delimited, there were 95 dwellings which were occupied by individuals designated as community members. We can infer that the number of dwellings corresponded to the number of households or elementary "families" in Research Community (see also Pearson 1969:116). Thus the average household would include about 5.1 individuals. Although it is low, this figure is reasonable when compared to the mean household size found in other Navajo communities. Moreover, the number would probably be slightly lower if the population base of the community study were considered at a single point in time. If known non-permanent residents of the community are not included in the calculation, the average number of persons per dwelling drops to 4.4. Since these excluded individuals were apparently only temporarily away at school or on a job, an average of about 5.1 persons per household in Research Community is probably a reasonable estimate.

Pearson (1969:55) noted that at least a few elementary family units formed parts of "extended units." However, he never specified the nature or number of these units in the community. On the other hand, Pearson (1969:34) included a map depicting 41 "residence areas," which may have been residence groups or "camps." The mean number of dwellings per "residence area" is 2.3 and the mean number of people per "residence area" is 11.8. This latter figure is lower than the "residence group" size at Shonto (Adams 1963:58) and the camp size at Navajo Mountain (Shepardson and Hammond 1970), but is greater than figures for camp size in other contemporary eastern Navajo Reservation communities (Lamphere 1971:123; Reynolds et al. 1967).

Consideration of social units larger than the "extended units" shows that the social organization was rather flexible.

> Clan relatives in neighboring communities may be called on to cooperate in assisting a relative in financial difficulty. They may cooperate in livestock or agricultural work and in house construction. Frequently they will exchange social visits (Pearson 1969:27).

This kin-based cross-community pattern of cooperation may have some significant economic correlates since the community was more wage-work-oriented than were adjacent communities (Pearson 1969:128). Eighteen different clans were represented in the community. The three major clans within the community were Bitter Water, Mexican People, and Deer Springs People.

Within the community, supra family organization seems to have consisted of several cross-cutting factions based on different organizational criteria. "The presence and activity of the various denominational groups represents a divisive force in the community" (Pearson 1969: 114). Pearson noted that there were adherents to three types of religion: Traditional, Mission (Christian), and Native American Church (Peyote). The 58 families (about 60 percent of all families in the community) who had associations with one of four missions at least once a year were reported as follows: Pentecostal, 11; Evangelical, 17; Liturgical, 7; and Mormon, 23 (Pearson 1969:116). The Native American Church was "a secret organization" (Pearson 1969:119).

The community was stratified, some families having more wealth and power than others. Pearson noted that in one Chapter factions formed around two wealthy families who were part of the community.

> The two wealthy families at the time of research were in frequent conflict. One is associated with "new guard" policies; the other supports "old guard" ideas. They are representative of two separate clan groupings which have competed for control of the chapter leadership (Pearson 1969:90).

During Pearson's work in the community, one of these groups displaced the representatives of "a single, but widely inclusive kinship group" which "had controlled the chapter affairs for about twelve years" (Pearson 1969:199). Thus two wealthy families seem to have served as a nucleus for the two large kinship groups which dominated the community and for the political factions which figured in Chapter activities.

Reference:

Pearson, Keith L.

1969 "Processes of Political Development in a Navajo Community." Ph.D. dissertation. University of Arizona.

18. BLACK MOUNTAIN, 1969

In a study of values, acculturation, and mental health, Henrikson (1971) sampled three communities, interviewing 20 men between the ages of 25 and 40 in each community. One community sampled was the Black Mountain area. It was defined generally by its proximity to the Black Mountain Trading Post and was located at the base of the south end of Black Mountain. Henrikson chose to sample Black Mountain because "in all important respects Black Mountain gives every outward indication of being a relatively traditional Navajo 'community'" (Henrikson 1971:47).

The sample was limited "to Navajo males in the 25-40 age group, since previous studies...had shown this group to be particularly sensitive to the effects of cultural change and disorganization" (Henrikson 1971:38). Thus Henrikson's sample of the Black Mountain "community" was in no sense representative of the total community. Over half the names of men on the BIA census list for the Black Mountain area could not be located, but by asking local informants to provide names, Henrikson generated a new list of 27 individuals in the Black Mountain area (including parts of the Tachee and Blue Gap areas). This list comprised the total number of men of that age group known to be living in the area. Henrikson interviewed 20 of the 25 men contacted. Thus for the age group of males under study, Henrikson's sample of the Black Mountain community residents was large. Henrikson (1971:61) asserted that "the educational background, economic status, etc. of those individuals included in this study is in all cases typical of the areas in which they live." The sketches of Navajo communities were peripheral to the major emphasis of his research, and Henrikson cannot be criticized for not making full-scale community studies.

In spite of these limitations, the data on Black Mountain presented by Henrikson are of some interest. Even though younger males were sampled, the average education was low, 3.15 years, and over half of them had had no education at all. By age 25, only half the men in the community had married. Henrikson's interviews indicated a fairly large degree of involvement in seasonal wage work: 9 men relied on this type of work. His inability to find many men on the BIA lists perhaps indicates that seasonal wage work was even more important to the community than his interviews suggest.

The average annual income for these men was $870 in 1969. Interestingly, none of the men in the sample had served in the military.

Henrikson's dissertation shows that even fragmentary data on a large element in a community can provide useful information for limited comparisons with similar groups in other areas. Although it is not a "community study," his work does add to our knowledge of Navajo communities.

Reference:

Henrikson, Craig Ernest
1971 "Acculturation, Value Change, and Mental Health Among the Navajo." Ph.D. dissertation. University of North Carolina.

IV. OFF-RESERVATION

19. SIX OFF-RESERVATION BORDER TOWNS, 1951

In the early 1950s, the Welfare-Placement Branch of the Bureau of Indian Affairs undertook a survey of six border towns: Gallup and Farmington in New Mexico; Cortez, Colorado; and Flagstaff (including Bellemont which served the Navajo Ordnance Depot, 15 miles west of Flagstaff), Winslow, and Holbrook, Arizona. The results were compiled by McPhee and published in 1953. The aim was to survey the Indian residents and to gain an idea of the conditions under which they were living. Information collected varied from town to town. Over 80 percent of the Indian residents were contacted in each town. In Bellemont, Cortez, and Farmington all or nearly all families were contacted.

Apparently, standard forms for the survey were not used, nor were the results reported in a uniform fashion. The variables studied were more adequately reported in some towns than in others. For instance, in Gallup one must calculate the probable total number of individuals in the sample from the average family size, but the average income figures are given. In Flagstaff, income was unreported, but sample size was made explicit. In Holbrook, 35 Indian families were contacted, but the survey committee did not distinguish between Hopis and Navajos. In Flagstaff and Winslow, tribal differences were examined and were found to be significant in many instances. The Holbrook findings will not be discussed here since data for Navajos cannot be separated from those for Navajos and Hopis combined.

Hodge (1969:16-18) drew further information about Farmington Navajos from a 1954 study by Seymour Parker of Cornell's Southwest Project. During the interim between the BIA study and the Cornell Project study, Farmington had experienced rapid growth creating new job opportunities. Yet the number of Navajo residents in Farmington did not increase proportionately, nor, apparently, was the standard of living appreciably increased.

Family Size

Table 19.1 provides information on the average size and composition of Navajo families in the border towns. They tend to be smaller than Reservation families. This may be due to the youthfulness of the group, or to the greater proportion of families which lacked one spouse or were without dependent adults (McPhee 1953:12). In Farmington, 10 families were childless and the figure for the average number of children per family-with-children was 3.0. In Winslow the number of children per family could not be accurately calculated, and in Bellemont the figure was estimated. In Cortez there were 9 individuals unattached to other Navajos (8 as domestic servants). In Gallup, 4 non-Navajo families were included (Hopi and other Pueblo couples) and 16 mixed (Navajos with non-Navajos) marriages. Although it may be assumed that the large sample size drowns any irregularities here, the figures in Table 19.1 should be used with some caution.

Economics

Off-Reservation economic data were not collected in a manner which permits strict comparisons to be made. In Gallup, Farmington, and Bellemont the minimum per capita income can be estimated at $600, $500, and $775, respectively. The economic data are best considered for each town separately. Unfortunately, the Winslow study yielded no adequate economic data. Information

Table 19.1: Navajo Family Size in Six Off-Reservation Border Towns in 1951

Town	Families	Individuals	Individuals per Family	Children per Family
Gallup	402	1,800	4.5	2.5
Farmington	59	254	4.3	2.5
Winslow	33	148	4.5	?
Flagstaff	51	224	4.4	2.1
Bellemont	131	700	5.3	2.6(?)
Cortez	8	45	5.6	3.3
Total	684	3,171		
Mean			4.6	

Source: Data compiled from McPhee (1953:1, 14, 28, 35, 44-46, 51) for Flagstaff is also lacking - the only economic data obtained were for length of employment. In Cortez it was found that the income of 8 families ranged from less than $50 per month to more than $250 per month. Two families were on welfare, and 2 others received old age benefits. Eight of 10 adult men were "employable" but only 4 worked full-time and 1 part-time, and none of their spouses worked.

In Bellemont all Navajo heads of households (131) plus an estimated 63 others were employed by the Navajo Ordnance Depot. Since "the lowest income of Indian employees at Bellemont is approximately $2800 per annum" (McPhee 1953:36) a minimum per capita income figure can be calculated to be about $775. It is unfortunate that no comparison can be made with Flagstaff Navajos.

In Farmington, 43 men were employed and earned an average wage of $119 per month. However, after examination of the salary distribution ($90 - $390 per month) in which modal and median values fall between $200 and $250, we have interpreted the figure of $119.11 (McPhee 1953: 18) as a misprint of $219.11 and have used the figure of $220 in calculating per capita income. (Only 20 percent of the men earned less than $150 per month.) In addition to the 43 men in wage and salaried positions, 2 men were unemployed. Of the working women, 8 headed households and 6 were wives of working men. Most men and women held unskilled or semi-skilled jobs, although 11 men were in seemingly skilled jobs (mechanic, machinist, carpenter, and welder); one was in a managerial position.

Conditions in Gallup and Wingate were somewhat analogous to those at Flagstaff and Bellemont. Each town (Gallup and Flagstaff) was associated with a nearby ordnance depot (Wingate and Bellemont respectively). However the investigator in the Gallup area did not distinguish between town (Gallup) and ordnance depot (Wingate) residents. The investigators did, however, collect income data. Three hundred twenty-eight men averaged $2,625 per year and 136 averaged $1,429 per year. The average family income was $2,800 per year. The major employers or occupations of Navajo workers were (McPhee 1953:4):

Wingate Ordnance Depot	190
Indian Service	47
Other government agencies	6
Construction contractors	34
Railroad	12
Silversmithing	33
Store clerk	19
Own business	3
Tourist industry or domestic	84
Miscellaneous other	41
Total	464

There were 374 wage-earning families at the time of the survey, with 15 household heads temporarily unemployed and 12 on public assistance. Fifty-one families (12 percent of all families) had recently received welfare, and one family had no obvious source of income.

The economic data of the border towns, though incomplete, seem to indicate that differences among towns did exist. If we divide the sample into two groups, with Bellemont and Wingate in one group and Farmington, Gallup, Flagstaff, Winslow, and Cortez in a second group, then two types of adaptation to border situations are evident. Taking Bellemont as the example of an ordnance depot town, one can see that jobs are steady and wages relatively high. Farmington, as an example of a "typical" border town, shows relatively lower wages and a less stable job profile. Furthermore, the jobs held by Navajos are largely unskilled and semi-skilled positions and are not guaranteed by the government in terms of pay or duration. Probably the economic indicators for Gallup (such as per capita income and salary) fall between those for Bellemont and Farmington because the sample was not divided into Wingate Ordnance Depot and Gallup subsamples. Table 19.2 provides information on job stability. Some recent changes in position and seasonal rather than permanent employment in some job types may inflate the impression of the short length of employment in towns.

Length of Residence in Town

A factor related to length of time on current job is the length of time of continuous residence in the town (see Table 19.3). This information is not available for Gallup, but it is known that mean length of residence there was 5 years. Our application of a chi-squared test showed that Bellemont Navajos had a significantly longer record of continuous residence than did the Navajos of the other towns.

Years of continuous residence in a particular border town may not be an adequate measure of a resident's experience as a migrant and town-dweller. There appears to have been a tendency for migrants to towns either to return to the Reservation or to move on to other towns periodically before settling into a steady job. In Cortez, Colorado, "economic necessity has been the chief reason for periodic migration to other places" (McPhee 1953:29).

Education

Tables 19.4 and 19.5 give some figures concerning the education of Navajo adults and children. Adults were mainly educated in Indian Service schools while a larger proportion of children were in attendance at local public schools. However, even among the children of border town residents, there was a heavy attendance at Indian Service schools. Average years of education were 7 for males in Gallup, 7.2 in Farmington, and 7.5 in Flagstaff.

Table 19.2: Length of Time on Current Job for Navajos in Border Towns, 1951

Town	$\bar{X}$ (years)	Range	Less than 1 year	1-4 years	4 or more years	Unemployed
Gallup	4	1 day - 30 years				28 (?)
Farmington			22	19	2	4 (?)
Cortez		? - 8 years				3
Flagstaff			17	16	10	7
Bellemont			8	58	65	0
Winslow			15	11	6	1

Source: Data from McPhee (1953:4, 19, 29, 38, 52)

Table 19.3: Length of Residence in Border Towns for 1951

Town	Median (years)	Less than 1 year	1-4 years	4 or more years
Farmington	2	12	35	12
Cortez	2	2	4	2
Flagstaff	1-2	19	19	13
Bellemont	3	16	54	61
Winsl[illegible]	2-3	12	9	12
Total		72	118	92
Total excluding Bellemont		56	64	31

Source: Data compiled from McPhee (1953:23, 24, 29, 37, 51)

Table 19.4: Educational Background of Migrants

	Gallup	Farmington[a]	Bellemont[a]	Flagstaff[b]
Percent with no school	?	17	31	23
Percent who attended school		82	69	76
Type of school attended[c]				
Indian Service	69	71		
Mission	14	19		
Public	2	4		
Business school or college	12	6		
	97%	100%		

[a] probably a sample of adults only

[b] family heads

[c] we do not know why the percentages for Gallup do not total to 100%

Source: Data from McPhee 1953:1, 2, 15, 16, 42

Table 19.5: Education of Children of Border Town Residents (Percent)

Type of School	Gallup (N = 510)	Farmington (N = 61)	Bellemont (N = 106)	Flagstaff (N = 35)	Winslow (N = 33)
Indian Service	35	44	50	46	24
Public	34	38	50	54	73
Mission	21	17	?	?	3
Number of school-age children not attending	?	7	12	8	4

Source: Data from McPhee (1953:2, 16, 17, 44, 55)

Religion

The investigators tried to determine the religious preference of migrants. These results are summarized in Table 19.6. A chi-squared test shows that among the Navajos of Farmington and Gallup there were a significantly greater number of self-identified Christians (of numerous denominations) than there were among the Arizona Navajos in Winslow, Flagstaff, and Bellemont.

Overall, 75 percent of the Navajo migrants identified themselves as Christians and 25 percent gave a response reported as no religious preference. Eighty-six percent of the Navajos in New Mexico towns and 52 percent in Arizona towns were Christian.

Summary

From the information compiled by McPhee, a profile of the Navajo migrants to small towns adjacent to the Reservation can be sketched. Family size is generally small, apparently reflecting young families. A typical family seems to have consisted of 2 adults and 2 or 3 children. Often a child was sent to a mission school or to an Indian Service boarding school, although most attended public schools. Perhaps the poor economic position of the families made the decision to send children to boarding school beneficial to the families financially. Even though families were poor, per capita income figures from border residents were probably almost twice

Table 19.6: Religious Affiliation in Border Towns, 1951

	Christian	Non-Christian
Gallup[a]	342	60
Farmington	58	1
Flagstaff	22	29
Bellemont	69	62
Winslow	20	13

[a] Based on conversion of percentages in a "spot check" of an unknown number of families (McPhee 1953:9)

chi-square significant at less than 0.01 level of probability

Goodman and Kruskal's tau equals 0.14

Source: Data from McPhee (1953:9, 22, 46, 56) what they were for Navajos living on the Reservation at about the same time. It should be added, however, that town-life involved many costs (e.g., rent) not usually encountered on the Reservation.

The investigators in Flagstaff stated, "As the majority of the people still have very close ties with the Reservation, this group also contributes its share to the economic well-being of the Reservation" (McPhee 1953:36). The majority of Navajos were in jobs requiring few skills and perhaps these people accounted for a large segment of the cyclical residence pattern among border town Navajos. The Navajos, after all, were not a homogeneous group in their adaptation to the border towns. A number were skilled workers, many had security in a government job. Unfortunately, McPhee's investigators generally did not indicate internal stratification in the sample, and in one case, that of Holbrook, they even ignored tribal designation. In spite of such limitations, however, a good deal of information can be retrieved from their study.

Comparison of Navajo and Hopi Migrants

The survey committees in Flagstaff-Bellemont and in Winslow recorded responses by tribe (either Navajo or Hopi), whereas the survey committee in Holbrook did not. There were no Hopis reported in Cortez or Farmington and only two all-Hopi families in Gallup. The McPhee (1953) studies of Winslow, Flagstaff, and Bellemont offer an interesting perspective on possible differences between Navajo and Hopi migrants.

The wide discrepancy between the number of Hopi families and the number of Navajo families is mostly because 88 percent of the Bellemont Indians were Navajos. The proportion of Navajo households in Flagstaff was 62 percent and in Winslow was 49 percent. By inspection the trends in the three towns are similar, and therefore the Hopis of all three towns have been grouped together so that they may be compared with all the Navajos (as a group) in the three towns. However, the fact that 61 percent of the Navajos, but only 22 percent of the Hopis, were Bellemont residents may have some disturbing effect on the results, in that some associations may be influenced more by the type of town in which a person resides than by his tribal designation.

In making our comparisons among Hopis and Navajos in these border towns we have measured the significance of tribal differences (using chi-square) on several variables. We have also measured the strength of associations (using phi-square which is equivalent to tau-a and tau-b in the case of a 2x2 table; see Glossary and Blalock 1972:301). Table 19.7 shows that Hopis were more likely to be long term residents of a town than were Navajos. Hopis also tended to hold jobs longer (Table 19.8). Apparently, job stability and length of residence were related; the longer one held a particular job, the longer one was likely to have lived in a particular town. This relationship was stronger among the Navajos than it was among the Hopis. It seems that Hopis were less likely to have been residents of a town because they had particular jobs. Spicer (1962:554-557) has commented on the differences between the Hopis and Navajos involved in wage work in the border towns in the 1950s. In general, Hopi families established small communities in border towns because of a limited land base on the Hopi Reservation. By contrast, Navajo families did not usually leave the Navajo Reservation as units. Rather, men usually left for seasonal wage work. "The women and children and older men tended to stay at their home sites on the reservation, although various arrangements were worked out for the wife and some children to live off-reservation with the men for short periods" (Spicer 1962:557).

The data from McPhee, taken from one point in time, cannot offer a firm confirmation of the general pattern outlined by Spicer. However, the data on the job stability and length of residence in town do suggest that the Navajo adaptation to the town situation was directly related to a particular job and that when the job terminated, so did the residence in a particular town. On the other hand, the Hopi may have viewed wage work in town as a more permanent condition.

Some other evidence also implies that Hopis were generally more permanent town residents. Hopi parents were less prone to enroll their children in Indian Service School than were Navajo parents. Hopi parents more often sent children to local public schools (phi-square = 0.13). Also, among Hopis and Navajos in Winslow and Flagstaff significantly more Hopis than Navajos owned their own homes: 23 percent of all Hopis but only 4 percent of all Navajos (McPhee 1953:40, 43-46, 54-56). These facts seem to strengthen the suggestion that Hopis generally considered life in a border town a more permanent condition than did Navajos. Navajos and Hopis in the Arizona border towns can also be compared with regard to religious behavior. Data presented in McPhee (1953:46, 56) indicated that Hopis were no more likely to attend Christian services than were Navajos. This suggests that whatever differences existed between Navajos and Hopis in their economic adaptation to border towns, there were no differences between the tribes in acceptance of Christianity.

Finally, as Table 19.9 shows, there was an astounding difference in the style of commercial transactions between Navajos and Hopis. Only 18 percent of the Navajo households made purchases solely by cash, compared to 71 percent of the Hopi households. If tribal affiliations of households

Table 19.7 Years of Continuous Residence in Border Towns, 1951

	Families		
Years of Residence	Hopi	Navajo	Total
0-4	24	129	153
4 or more	59	86	145
Total	83	215	298

chi square = 21.93; df = 1; p = less than 0.005

phi square = 0.074

Source: Data from McPhee (1953:37, 51)

Table 19.8: Length of Time on Present Job in Border Towns, 1951

	Household Heads		
Length of Time in Years	Hopi	Navajo	Total
0-4	35	125	160
4 or more	45	81	126
Total	80	206	286

chi square = 6.03; df = 1; p = less than 0.025

phi square = 0.021

Source: Data from McPhee (1953:38, 39, 52) in these border towns were known, errors in assessing whether households used credit or cash would be reduced by 25 percent.

In general, Hopis seem to be more committed to permanent residence in the border towns. They are longer term residents despite changes in employment. They are more likely to own their homes, to make cash transactions rather than rely on credit, and to put their children into public schools rather than federal or mission schools.

Reference:

McPhee, John C. (compiler)

1953 Indians in Non-Indian Communities: A Survey of Living Conditions Among Navajo and Hopi Indians Residing in Gallup, New Mexico; Cortez, Colorado; Winslow, Arizona; Farmington, New Mexico; Flagstaff, Arizona; Holbrook, Arizona. The Window Rock Area, U.S. Indian Service, Welfare-Placement Branch.

20. RICO, 1953-1954

During 1953 and 1954 Luebben worked in Rico, a small mining community in southwestern Colorado. In November of 1953, 35 percent of its population was Navajo. Luebben's (1955) dissertation concerned Navajo miners in Rico. His study included some information on population and income as well as more detailed analyses of Navajo-Anglo relations, Navajo work patterns, and Navajo adjustment to off-Reservation living.

In 1952, over half of the cash income for the Navajos as a whole came from employment off the Reservation (Luebben 1955:3). Most of this employment involved seasonal jobs, especially railroad work. Men usually left their homes on the Reservation to work in large mine crews. Employment in the Rico mines, however, allowed entire families to move off the Reservation and to establish households near the job site of the wage earner.

Table 19.9: Use of Cash or Credit by Households in Border Towns, 1951

	Households		
	Hopi	Navajo	Total
Credit	24	176	200
Cash	59	39	98
Total	83	215	298

chi square = 73.67; df = 1; p = less than 0.005

phi square = 0.247

Source: Data from McPhee (1953:47, 57)

Rico became the locus of a Navajo community. The Navajos generally lived in company-owned houses which were more poorly equipped than were company houses occupied by Anglos (Luebben 1955:324). Navajos in Rico had developed ties in Rico (Luebben 1955:53-54, 305).

Population

The Rico Navajo community was not stable. Two hundred twenty Navajos lived in Rico between July 1, 1953, and June 30, 1954. There were only 117 Navajos resident on November 1, 1953 (Luebben 1955:47). The cyclical and seasonal nature of Navajo employment in Rico was also illustrated by the fact that of 245 hirings of Navajos by the Rico Argentine Mining Company between 1941 and 1954, 84 were rehirings. From July 1953 to June 1954, the company hired 46 Navajos, only 20 of whom had not worked for the company before (Luebben 1955:69, 73).

In Rico on November 1, 1963, the mean number of children in residence for each married couple was 2.2, and for each married couple including non-resident children was 2.9. Eighty-four percent on the married men brought their spouses to Rico with them.

Kinship relationships in Rico extended beyond the nuclear family. Only 15 of the 75 males were not related consanguineally or affinally to at least one other male in Rico. The kinship network in Rico was a consequence of the fact that "with few exceptions, personnel were recruited through...personal contacts, usually through a relative or friend who worked in Rico" (Luebben 1955:65).

The mode of recruitment also helps to explain the distribution of the home areas of the Rico miners. Rico residents came almost exclusively from the eastern end of the Reservation; most came from the area of the uranium boom (Luebben 1955:56). One man came from Kayenta (Luebben 1955:49) but no one came from further west.

Economy

Luebben gained information on the total wages earned by each of 75 workers over the period from July 1, 1953, to June 30, 1954. These data are presented in Table 20.1. The total amount of wages earned during the period was $116,209.08, an average of $1,549.46 per man (Luebben 1955:116). These figures yield a per capita income for the year of $528.22.

Table 20.1: Wage Income Distribution Among Rico Navajo Miners

Total Wages Earned (dollars)	Frequency	Percent
0-500	25	33.3
500-1,000	10	13.3
1,000-1,500	6	8.0
1,500-2,000	9	12.0
2,000-2,500	6	8.0
2,500-3,000	5	6.7
3,000-3,500	5	6.7
3,500-4,000	5	6.7
4,000-4,500	2	2.7
4,500-5,000	1	1.3
5,000+	1	1.3
Total	75	100.0

Source: Data from Luebben (1955:117)

The income figures do not present a total view of the Navajo yearly income. In addition to wages from mine work, Navajos in Rico also derived

> supplementary forms of cash and kind income from the manufacture of jewelry, weaving of rugs, hunting and fishing, keeping livestock in Rico, scavenging (i.e., the Rico dump), and from their services as domestics or laborers...(Luebben 1955:123).

These sources of income would tend to raise income figures only slightly.

A more important factor affecting annual incomes was the transitory work pattern mentioned above. Although 75 Navajos worked for the company between July 1, 1953, and June 30, 1954, there were only 32 working on the latter date and only 13 of those men had worked the full year (Luebben 1955:94). This core group of 13 seemed to include fairly stable residents of Rico who averaged over 3 years of employment with the company. On the other hand, of the 50 Navajo workers separated during this period, 58 percent left before completing a year of work. It is apparent from these figures and from those in Table 20.1 that some workers contributed much more to aggregate figures in terms of income and that income is certainly correlated with length of residence. This correlation is demonstrated by the fact that 13 men worked a full year and 14 men made over $3,000 in that year.

The temporary working patterns characterizing the large majority of Rico miners working during any one year tended to depress the average income figures given above.

Luebben (1955:91) gathered job information on 29 of the workers after they left the Rico mines. About half (15) returned to the Reservation to farm or to herd sheep, apparently rejoining extended family camps. Six returned to the Reservation to work as wage laborers, and 8 worked as wage laborers elsewhere off the Reservation.

Clearly, the data for Navajo miners in Rico reveal two patterns. "Undoubtedly, the need for quick cash was responsible for some Navahos coming to Rico" (Luebben 1955:67) and most of the men and their families were temporary residents, returning to the Reservation or taking another job off the Reservation after only a few months in Rico. By contrast, a minority of workers (perhaps 20 to 25 percent) and their families were making their jobs "a way of life" (Luebben 1955:81), and were relatively long term residents of the mining community.

Social Organization

Luebben's dissertation contained little information on the social organization of the Navajo in Rico. He concentrated on social interaction among miners on the job (Luebben 1955:147-254). In a later paper he noted that among Rico Navajo miners "evidence of differential status and leadership quite contrary to traditional patterns may be clearly distinguished in the mining situation' (Luebben 1962:13). It was not clear whether these non-traditional patterns of social status were present in Rico outside the mines.

Two other papers by Luebben (1964a, 1964b) treated other aspects of Navajo social life in Rico. Although small children of both major ethnic groups in Rico (Navajo and Anglo) played together, there was no adolescent "cross-cultural" dating (Luebben 1964b:12-13). "Apart from the economic pattern, no extended personal interaction between members of the two groups existed" (Luebben 1964b:8). "Interestingly, much more social life existed among the Navajos than among Anglos" (Luebben 1964b:9). Unfortunately, the nature of that social life was not described. One suspects, given the extensive kinship networks present in Rico, that much social activity was organized along kinship lines.

Navajos experienced considerable discrimination and prejudice in Rico (Luebben 1964b) but "overall negative discrimination against Navahos appears to have been minimal in the justice courts..." (Luebben 1964a:72). On the other hand, between 1946 and 1954, Navajos accounted for 82.5 percent of all arrests in Rico and in fiscal 1954, Navajos accounted for 76.2 percent of arrests while comprising about 35 percent of the population (Luebben 1964a:52). About four-fifths of the Navajo arrests were for disturbing the peace (Luebben 1964a:66). Luebben (1964a:67) stated that "noticeably more Navahos were drunk and disorderly than Anglos." Furthermore, drinking was a major factor in dismissals and the high absentee rate among Navajo miners (Luebben 1955:81, 149-150). Group drinking was apparently a major aspect of Navajo male social interaction in Rico.

Finally, much of Rico Navajo social life was interwoven with kin and communities on the Reservation. Visits to the Reservation were, aside from drinking, the major cause of absences from the mine (Luebben 1955:149-150).

Luebben concluded that,

> for most of the Navaho personnel, off-reservation mining is short-term employment and a measure whereby the individual earns enough money to satisfy his particular immediate needs, but employment does not mean economic security and social status in the community. On the contrary, to a few Navahos, their occupation is becoming a way of life and assumes status value (Luebben 1955:337).

He added that,

> The Navaho Reservation continues to offer security to Navahos living off the reservation since it remains an economic cushion and the base from which to operate..." (Luebben 1955: 349).

The pattern of Navajo work and residence in Rico and its intimate connection to the Reservation is similar to that revealed by a contemporaneous study of several off-Reservation border towns (McPhee 1953:29). However, the overall fluctuations among the Navajo population in Rico seem to have been even greater than in the border towns.

References:

Luebben, Ralph A.

1955 "A Study of Some Off-Reservation Navaho Miners." Ph.D. dissertation. Cornell University.

1962 "Navajo Status Leadership in a Modern Mining Situation." Plateau 35:1-14.

1964a "Anglo Law and Navajo Behavior." Kiva 29:60-75.

1964b "Prejudice and Discrimination Against Navajos in a Mining Community." Kiva 30:1-17.

21. ALBUQUERQUE 1959-1961

Hodge (1969) has described the Navajo population of this New Mexico urban center based on 2 years of fieldwork from July 1959 through June 1961. The work has a number of small mistakes and inconsistencies. For example, distances from Albuquerque to various places in the Southwest were consistently overestimated. Citing no source, Hodge asserted that "Ramah is a community of about 400 Navajos" (Hodge 1969:23). The population of the Ramah Navajo has consistently been reported by the Harvard Values Project as around 600 in 1950 (see, for instance, Kluckhohn 1966:333) and it has been increasing since then (Reynolds et al. 1967: 189). Such minor lapses in scholarly rigor are not as characteristic of Hodge's own fieldwork. However, there are inconsistencies within the study, particularly in the section of his paper entitled "Original Locations of Albuquerque Navajo Migrants." According to his Table 3, Hodge (1969:40) found no one whose "place of origin" was Ramah. Yet he stated "Brad Wheeler came to Albuquerque from Ramah in 1941" (Hodge 1969:43) and indeed in his Figure 2 (Hodge 1969:vii), Ramah was indicated by a symbol keyed as "Navajo Origin Community." At least 20 other locations also unlisted in his Table 3 were also keyed with this symbol. In Hodge's Table 3, 5 Navajo were listed as coming originally from Torreon. In his Figure 2, only one location was labeled Torreon. It was keyed as a "Navajo Origin Community" and was located southeast of Albuquerque. It is more likely that these Navajos came from Torreon Chapter in the District 19 "checkerboard" area. There seems to be little correspondence between the map and table published by Hodge.

Such inconsistencies, though minor, lead one to be cautious about the rest of Hodge's work. There was a large "unknown" category of over 60 respondents (roughly 22 percent of the population) in his Tables 3, 4, 5, and 7 (Hodge 1969:40-42). Hodge never discussed whether his sample was representative or whether this "unknown" 22 percent of the population might be rather different from the others (e.g., more temporary). Hodge found 275 adult Navajos (18 years and older) in Albuquerque at some time or another during his study: 220 during the first months, with 55 subsequent additions (Hodge 1969:40). "Most of these were Navajos who came to the city after October [1959]" (Hodge 1969:70). In spite of this statement, according to his Table 4 (Hodge 1969:41), only 17 Navajo migrants arrived in Albuquerque between 1959 and 1961.

Hodge has described his data gathering and sampling procedures as follows:

> Sixteen adult males were chosen for intensive study...In addition, sufficient data were gathered on 92 others so that they could be used to test, modify, and strengthen any tentative conclusions...Data from the remaining 166 Navajos were used mainly to provide depth and unity to the general demographic characterization of Navajo Albuquerque (Hodge 1969:71).

It is not clear how the 92 individuals in the sub-sample were chosen. Hodge also lumped data from the sub-sample with data from the group of 166 "remaining" Navajos, although he clearly implied that the data were gathered in different ways, or at least that the data were of different levels of reliability. Having noted these inconsistencies, we turn to the body of Hodge's findings.

Table 21.1 presents the marital status of 261 adult Navajos in Albuquerque as of about 1960. At that time, there were 112 families. About 60 percent of the married Navajos had married prior to coming to Albuquerque. Hodge maintained that Navajos were not concentrated in any one part of town and were represented, in small numbers at least, in most Albuquerque neighborhoods.

There was no uniform social structure beyond the household level among the Albuquerque Navajo. Hodge (1969:43) noted that they "constitute an aggregate, not a group." There was a "Navajo Club" but few were active in it. The Native American Church had 25 adherents and met in Canyoncito two or three weekends per month. The all-Navajo Pentacostal Church had only 10 members. While all Navajos knew to which clan they belonged, clan relationships did not foster aid. Hodge's findings indicated a lack of cohesion among Navajos in Albuquerque. There was little interaction among them and few had any idea of how many Navajos lived in the city.

Table 21.1: Marital Status of Albuquerque Navajos

Marital Status	Ethnicity of Spouse	Male	Female	Total
Single	---	29	53	82
Married	Navajo	67	67	134
	Other Indian	17	2	19
	Anglo	11	3	14
	Spanish	5	4	9
	Unknown	3	0	3
Total		132	129	261

Source: Data from Hodge (1969:40-41)

Economics

Hodge gathered occupational data in Albuquerque for 128 males and 100 females. If the "unknown occupation" category of 61 is added, a total of 289 individuals is found, but this total is larger than the total sample size. The information provided by Hodge does not explain the numerical discrepancy. We are led to wonder whether some individuals were counted twice. The largest employer was the United Pueblo Agency (UPA) which employed 25 Navajos. A wide range of occupations was shown, numbering 58 in all. Navajos seemed to be represented in skilled, unskilled, and professional job categories. Aside from housewives and "Canyoncito transient drunks," Hodge claimed that "there are no unemployed Navajos in Albuquerque" (Hodge 1969:43).

Income data were supposedly gathered on 104 Navajos (Hodge 1969:71) but there was considerable reticence to give income information. For this reason, the reporting of income for permanent and "Anglo-modified" Navajos was drawn from 1960 census data. Hodge gave only a range of income: $4,000 to $15,000. "Traditional" Navajos were not as reluctant to give income information, but again Hodge reported only the range: $1,200 to $3,000 (Hodge 1969:42-43).

Table 21.2 gives arrival dates in Albuquerque for 213 Navajo. Also covered in the Table are years for which no Navajos who were in residence in 1960 came to Albuquerque. Arrival dates revealed that Navajos populated Albuquerque most heavily in the post-war years, with arrival peaks in 1950 and in 1957. This pattern was reflected in the general youth of the population and may be partly an artifact of older people, who migrated to Albuquerque before 1950, returning to the Reservation.

"There were never more than 180 to 200 Navajos in residence at a given time" (Hodge 1969:40). Permanency of residence, however, was not a criterion which Hodge monitored closely in his analysis. He assigned 190 persons to two classes, permanent and non-permanent residents. There were 42 of the former. He then subdivided the latter category into "Anglo-modified" (73) and "traditional" (58). Twelve individuals could not be placed into either of these categories. The criteria distinguishing permanent city residents from non-permanent residents were preference for the city and the decision to remain in Albuquerque. Length of residence was not considered to be a factor. Apparently about 90 individuals (42 percent of those whose migration date was known) had lived in Albuquerque 10 years or longer. This is twice the number of "permanent" residents (Hodge 1969:2-5, 40-41).

Few of Hodge's quantitative data were broken down into the tripartite division (permanent - "Anglo-modified" - "traditional") so that they are of little functional value in interpreting the non-attitudinal differences among these categories.

Hodge concluded his paper with a discussion of "push-pull" forces in the "urban-reservation system" which is interesting but which is essentially a tabulation of factors rather than a predictive or explanatory model.

Hodge's paper is so ridden with minor factual errors that we hesitate to place much confidence in either the data or the conclusions. The use of the large amounts of information Hodge collected is extremely limited, even in those areas which he seems to have considered important. For instance, such parameters as modal number of children per married couple and range of income are not very useful measures. The usefulness of Hodge's work lies in its attempt to give, for a single city, a general overview of the variation in Navajo urban life.

Reference:

Hodge, William H.
1969 The Albuquerque Navajos. Anthropological Papers of the University of Arizona, Number 11. Tucson: The University of Arizona Press.

Table 21.2: Year of Arrival of Migrants to Albuquerque for a Sample of Navajos Resident in Albuquerque 1959-1961

Years	Number of Individuals
1901 - 1912	2
1913 - 1921	0
1922 - 1928	6
1929 - 1933	0
1934 - 1945	14
1946 - 1951	101
1952	0
1953 - 1958	73
1959 - 1961	17
Total	213

Source: Data from Hodge (1969:40-41)

22. FLAGSTAFF NAVAJO, 1968-1969

In the summer of 1968, a census was made of Flagstaff Navajos (Kunitz et al. 1969). One hundred twenty-five families were identified and 119 household heads were interviewed. This latter figure probably represented 90 percent of all Navajo households in Flagstaff. These families were composed of 574 individuals (4.8 individuals per family) but only 479 individuals were resident throughout the year (4.0 per household). Forty-eight percent of the residents had lived in Flagstaff for more than 4 years.

In the summer of 1969, an attempt was made to recontact all the household heads in the 1968 survey. About 46 percent of those in the 1968 census were no longer in Flagstaff (Kunitz et al. 1970). The emphasis of the 1969 follow-up was on a comparison of "leavers" and "stayers." In addition, "long term" residents (resident more than 10 years) were compared with "short term" residents (resident less than 10 years). Kunitz concluded that:

> At present we can only state that the Navajo migrants to Flagstaff, whether dichotomized by the stayer-leaver categories or long term-short term residents, cannot be distinguished by two of the traditional gauges of acculturation, occupation and education (Kunitz et al. 1970:105).

Kunitz and his associates presented an extensive description of the Flagstaff Navajo in 1968-69. For a fuller description of the Flagstaff Navajo and a discussion of differences between stayers and leavers, the reader is referred to Kunitz et al. (1969, 1970).

Data relating to long term residents were more intensively analyzed by Levy and Kunitz (1974). By concentrating on long term Navajo residents in Flagstaff, some characteristics of relatively permanent border town dwellers were revealed.

In 1968 there were 32 families with household heads who had lived in Flagstaff for 10 or more years. In 1969, 28 of these were still in town. Every adult in each of these families who had lived for 10 or more years in Flagstaff was interviewed. The total number was 48. Three households included non-Navajo heads of households and these individuals were not interviewed (Levy and Kunitz 1974:90). The 25 households with all Navajo members had a summer population of 132 persons and a year-round population of 119. The mean average year-round household size was 4.76 (range 1 to 10).

Table 22.1 presents the age distribution of the total Flagstaff Navajo population in the 1968 census. The average age of the 25 household heads in the 1969 survey was 45 years (range 26 to 70) and the median was 46. Eight household heads were female, 17 were male. Not unexpectedly, 90 percent of the families were neolocal. Matrilocal and patrilocal extended families accounted for only 6 and 4 percent respectively (Levy and Kunitz 1974:112).

Flagstaff adults tended to have more years of formal education than did their contemporaries living on the Reservation. The mean number of years of education for household heads was 8.44 years in Flagstaff, 6.32 in the wage work community of South Tuba City, and 3.98 in the pastoral community of Red Lake. These figures represent a real difference which cannot be attributed to the youth of the Flagstaff population, because the sample interviewed consisted of long term residents of Flagstaff. The Flagstaff sample was also atypical of other Navajo populations studied, in that adult women had more education than did adult men (9.6 years and 8.1 years respectively.

As expected, steady wage work provided the major source of income for 58.3 percent of the sample adults. Seasonal wage work was engaged in by 14.8 percent; 12.5 percent were on welfare, were retired, or were unemployed; and 14.6 percent were either housewives or students. In 1968, some 19 percent of 116 Navajo household heads interviewed were federal employees. The average annual per capita income for long term residents was about $1,418 in 1969.

The study of long term residents of Flagstaff is unusual in that, by separating transients from permanent residents, attention can be focused on the successful Navajo migrant. These long term city dwellers differed from the total Navajo population in a number of ways. Not only were they more educated and more skilled but they appear to have come originally from many different areas of the Reservation, while the more transient came mostly from nearby Reservation communities. In addition, the parents of the long term residents had fewer livestock holdings and were more engaged in wage work than were the average western Navajo families of the 1960s (Levy and Kunitz 1974:118-119).

Table 22.1: Age Distribution of the Flagstaff Navajo Population in 1968

	Population	
Age	Frequency	Percent
Under 18	309	54.2
19-24	75	13.2
25-34	101	17.7
35-44	36	6.3
45-54	30	5.3
55-64	8	1.4
More than 65	0	0.0
Unknown	11	1.9
Total	570	100.0

Source: Data from Kunitz et al. (1970:101)

References:

Kunitz, Stephen, Jerrold Levy, Paul Bellet, and Tom Collins
1969 "A Census of Flagstaff Navajos." Plateau 41:156-163.

Kunitz, Stephen, Jerrold Levy, and Charles Odoroff
1970 "A One Year Follow-up of Navajo Migrants to Flagstaff, Arizona." Plateau 42:92-106.

Levy, Jerrold, and Stephen Kunitz
1974 Indian Drinking: Navajo Practices and Anglo-American Theories. New York: John Wiley & Sons.

23. DALLAS, 1957-1961

In fiscal year 1958, the Bureau of Indian Affairs opened a Field Relocation Office in Dallas, Texas. In that year, 62 Navajos relocated in Dallas (Young 1958: 112, 120). By the end of fiscal year 1960, a total of 265 Navajos had relocated in Dallas, including 63 single males, 5 single females, and 44 families averaging about 4.48 individuals per family (Young 1961:238). By mid-1960, however, 40 percent of all relocated Navajos were known to have returned to the Reservation, i.e., only 159 Navajos remained in Dallas on relocation. This was the largest return rate reported for the Navajos by any Field Relocation Office (Young 1961:238). The number of Navajos relocating in Dallas increased and by late 1963 there were about 300 Navajo single and family units in Dallas under the BIA Employment Assistance program, the successor of the BIA Relocation program (Hodge 1969:13). This figure is roughly four times the number of units present in Dallas 3-1/2 years earlier. There is no available information concerning those Navajos in Dallas who were not connected with the BIA relocation. We do know that there was, in the early 1960s, at least one such family (Hodge 1971:359).

In a study of the adjustment of Indians to an urban environment, Martin extracted information

> from case files on 311 single individuals and family heads relocating to a Southwest metropolitan area between September, 1957 and July, 1961. In this period some 1,384 individuals and families from 79 different tribes relocated to the area; the Navajo, Sioux and Choctaw tribes accounted for approximately 43 percent of the total. The 311 cases...represent these three tribes (Martin 1964:291).

The Navajo appear to have accounted for well over half of those relocated among the three tribes and nearly one-fifth of the total number of Indians relocating to Dallas.

Martin's basic Navajo sample consisted of 128 individual cases subdivided as follows (1964:291):

(a) 35 married men (every second case)
(b) 81 single men (29 on vocational training plus every third single male on relocation for employment)
(c) 12 single women (7 on vocational training).

The estimated total number of all Navajo "units" relocating was 267. However, case material on some individuals was incomplete and the sample sizes used for different variables were not the same.

Martin "assessed" adjustment,

> in general...on the basis of evidence indicating seeming ability or inability to cooperate and perform in the process of finding and maintaining employment, and the extent to which reported behavior in other areas reflected a tendency to run afoul of behavioral norms (Martin 1964:291).

This assessment was then analyzed in relation to other variables relevant to the Navajo (age, sex, schooling, arrests prior to relocation, military experience). Unfortunately, "adjustment" was not compared to return rates or length of time in Dallas and the rating procedure for adjustment (Martin 1964:295) did not take account of whether the individual returned to the Reservation or stayed in Dallas. Indeed, an individual might "do well and then return to reservation" and receive Martin's highest possible rating for "adjustment" (Martin 1964:295). Thus in Martin's work, "adjustment" had no connection with the length of time a resident remained in the city.

Although Martin's Navajo sample was not strictly a random sample of males, the sample probably was a fairly accurate representation of the population of relocated Navajo males in Dallas. Male Navajos in Dallas were largely young and unmarried (about 75 percent were single and 80 percent were under 25). About half the Sioux were married and/or older than 25, while most Choctaw were married and more than half were over 25 (Martin 1964: 291, 293). The years of education were available for 102 Navajo men. These data showed that Navajos were more poorly educated than were either Sioux or Choctaw. Half the Navajo men had 1 to 6 years of schooling. One-third of them had from 7 to 11 years of education, while one-sixth had 12 or more years in school. Ninety-two Navajos had only attended Indian schools while 10 also had some public school experience (Martin 1964:293). Before relocation to Dallas, only 38.6 percent of Navajo men had ever been arrested. This percentage is lower than the fraction of Sioux or Choctaw arrested, but the difference may be attributable chiefly to the youthfulness of the Navajo, especially in comparison to the Choctaw, of whom only 42.6 percent had been previously arrested (Martin 1964:294). However, age-adjusted arrest rates cannot be calculated from Martin's data.

Relationships between "adjustment" and youth, "adjustment" and high education, and "adjustment" and arrests could not be established statistically within tribes except in a few cases. Navajo high school graduates were better adjusted than were non-graduates (Martin 1964:293). Martin concluded that

> Adaptive-like behavior is displayed more frequently by the Navajo, followed in order by the Choctaw and Sioux, and the differences are more sharply pronounced among women than among men (Martin 1964:292).

An analysis of Martin's Table 2 (1964:292) bears this out and also shows that Navajo women were significantly better "adjusted" than were men although the sample of women was very small (only 12 individuals).

Citing Leighton and Kluckhohn, Martin stated that "It is possible that the passive and cooperative nature of the Navajo is the most plausible explanation for their performance" (Martin 1964:294). However, in a study which equated "adjustment" largely with job success, Martin did not really offer enough economic data to warrant such a conclusion. Several key economic variables identified by Weppner (1971:258-259), such as wage and job-skill levels, could have helped elucidate this problem.

Martin's interest in "adjustment" limits the usefulness of his article in understanding the Navajo community or social network in Dallas. He did not discuss different types of adaptation to city life or whether those relocating stayed in or left Dallas. Since the study focused exclusively on persons assisted by the BIA in relocating, other Navajos in Dallas were ignored. By citing such limitations, we do not imply a criticism of Martin's work, since the missing data were in fact peripheral or irrelevant to the theme of Martin's study. Unfortunately, in our review of the literature, we could find no basic economic or social organization data for Navajos in Dallas. Only the most sketchy demographic data are available.

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24. DENVER, 1963-1966

The most extensive and sophisticated study of urban Navajos yet conducted was that made by a research team from the University of Colorado under the direction of Graves. The Navaho Urban Relocation Research Project (Graves et al. 1965) studied numerous aspects of Navajo migration to Denver under the BIA's relocation program. A number of significant papers were produced which concern not only the economic (Weppner 1968, 1971) and social (Snyder 1968, 1971; McSwain 1965) characteristics of the Denver Navajo, but also the values (Graves and Van Arsdale 1966), "acculturative stress" (Alfred 1965), individual adjustment (Graves 1970; McCracken 1968), and personality (Graves 1974) of these Navajo migrants. The major goal of the research project was evaluation of the "adjustment," "social assimilation," or "absorption" of the Navajo population in the greater Denver community. The large body of literature produced by the project is not easily summarized. Our emphasis here will be more restricted than that of the research project, and we will focus on demographic, economic, and social variables.

Demography

In 1960, Denver was one of 8 cities in which the BIA retained a Field Relocation Office. It was the site of the closest relocation office to the Navajo Reservation. By 1960, 355 Navajos had relocated to Denver, representing about 11 percent of all Navajo relocatees. Denver had the lowest return rate (25 percent) of any major center of Navajo relocation (Young 1961:235,238).

Three years later, when Graves began his research, Navajos constituted roughly one-third of all Indians migrating to Denver. During the next 3 years (1963 to 1966), "essentially all Navajo males who had come to the city for direct employment (rather than vocational training) were systematically interviewed" (135 individuals) as well as about one-third of the returnees to the Reservation (124 individuals) (Graves 1974:68). The approximately 488 migrant Navajos from which Graves drew his sample represented 94 percent of known Navajo migrants to Denver over the previous 10 years (Graves 1970:37). According to Graves' figures, nearly three-fourths of all Navajos relocating to Denver returned to the Reservation. This number is almost three times the figure reported by the BIA. Weppner (1971:254) found that about half of all Navajos relocating to Denver returned home within 3 months after their arrival in Denver.

Young's (1961:238) data showed that prior to 1960, single males constituted 59.4 percent of male migrants to Denver. Graves and his associates also found a greater proportion of unmarried male migrants. Of the total sample interviewed, only 20 percent were married at time of relocation and 75 percent remained single throughout their stay in Denver

(Graves 1970:49). On the other hand, 69 percent of the long term residents in Denver were married (Snyder 1968:93). Single males were thus less likely to remain in Denver. The continued influx of single males probably contributed greatly to the increasing rate of return.

Navajo males relocating to Denver were also quite young. A sub-sample of 100 migrants analyzed by Graves and Van Arsdale (1966:301) had a median age at relocation of 21 years and ranged in age from 18 to 49 years at the time of interview.

Young's data (1961:238) also showed that the average size of the 69 Navajo families relocating to Denver before 1960 was 3.46 members. Apparently most families migrating to Denver were small nuclear families with one or two offspring. Unfortunately, Graves and his associates did not specifically study demographic factors. Thus they do not enable us to make a calculation of household or family size among Denver Navajos on relocation.

Table 24.1 shows the educational status of all Navajo migrants to Denver who were interviewed. In addition to formal education, 86 percent of the migrants had received vocational training in skilled (41 percent) or semi-skilled (45 percent) trades. Snyder (1968:47) reported that the mean number of years of education was about 6. In a sub-sample of 24 married couples, McSwain (1965:252) found that husbands, with an average of 8.4 years of formal schooling, tended to have more education than did their wives, who averaged 7.1 years of schooling.

Table 24.1: Educational Status of Navajo Migrants to Denver

Years of Education	Percent
11 or more	14
8-10	31
5-7	45
4 or less	10

Source: Data from Graves (1970:45)

Most migrants (60 percent) considered their family of orientation (that is, the families in which they were reared) to be better off economically than their neighbors on the Reservation. The fathers of 39 percent of the migrants had been wage laborers, while the fathers of the remaining 61 percent were primarily herders or farmers (Graves 1970:45).

Economics

The main source of economic data on the Denver Navajo is Weppner's (1971) article summarizing his doctoral dissertation (1968). Weppner's data were based on 244 interviews. He divided this sample into "stayers" (105 Navajo males having lived in Denver for 18 or more months, a period 6 months beyond that during which the BIA provides assistance) and "leavers" (139 Navajo men having returned to the Reservation before they had spent at least 18 months in Denver) (Weppner 1971:250).

Weppner discovered that the four best predictors of whether a migrant stayed in or left Denver were: (1) the amount of pre-migration wage work experience; (2) the type of vocational training (skilled or unskilled); (3) the percentage of time spent unemployed during the first half of a migrant's stay; and (4) the initial wage received on the migrant's first job (Weppner 1971:258-259).

"Stayers" had not only spent about twice the time (29.2 months) in premigration wage work as had the "leavers" (16.1 months), but they also spent about one-third the amount of time that the "leavers" did in finding work (Weppner 1971:255). While 86 percent of the sample had vocational training, only about half had jobs requiring more skills than those possessed by an ordinary manual day laborer (Graves 1974:68). In a sub-sample of 100 migrants (43 "leavers," 57 "stayers"), Graves and Van Arsdale (1966:301) found that only 20 held skilled jobs. Weppner (1971:256) noted a strong tendency for migrants to stay if their first job was similar to their training and to leave if it was not.

The economic position of Navajos in Denver was marginal. "On the average, Navajos received far below the general working wage for semi-skilled positions in Denver" (Weppner 1971:255). The median wage for 259 Denver Navajos was about $1.35 an hour (Graves 1974:68). Not only did 62 percent start at less than $1.25 per hour on their first job, but the starting wage in Denver was lower than the highest premigration wage for over half these men. Even at the time of interview, only 45 percent of the total sample earned more than $1.35 per hour (Graves 1970:43).

In 1965, Weppner (1971:255) found that Navajos staying in Denver had a starting wage averaging about $59.20 per week, while "leavers" had started at a lower scale, averaging $52.00 per week. These "postmigration experiences appeared to be the more critical determinants in the migrant's decision to stay than the premigration conditioning" (Weppner 1971:260).

The differences between long term and short term residents were enhanced for other economic variables. The average job length of "stayers" (21.3 months) not only exceeded the amount of time "leavers" spent in Denver, but it was almost 8 times the average job length (2.7 months). Also, the average highest wage received by "stayers" was more than 36 percent higher than their initial wage, or $80.80 per week. By contrast, the average highest wage of "leavers" was only $57.20 a week, a 10-percent increase over their initial wage (Weppner 1971:257).

Since "stayers" represented the more stable element of the Denver Navajo (Graves et al. 1965:57), it is appropriate to calculate their yearly income. Based on their highest wage and a 50-week year, they averaged a little over $4,000 per annum. Unfortunately, family income cannot be calculated since there is no information on the percentage of working wives or their contributions to family income. Also, without adequate census data, per capita income estimates cannot be made with any degree of accuracy.

Graves stated that "those who remain in the city longest display the strongest economic value orientation" (Graves 1970:43). But even the economic position of "stayers" was marginal. Weppner (1971:250, 252, 257) interviewed 41 Anglo workers as matched controls. These workers of low socio-economic status earned an average of $94.00 per week, about 16 percent more than did the Navajo "stayers." Graves (1970:45) believed that "favorable premigration experience" was a factor which raised a migrant's aspirations above those which could be fulfilled in the urban situation. He considered that this conflict produced a sense of relative deprivation. Weppner's data indicated that Navajos not only "sensed" relative deprivation but also suffered from it.

Social Organization

"Of the 135 respondents interviewed in Denver only 62, or 46 percent, had any friends or relatives already in the city upon their arrival and the extent of this network averaged about 1.5 persons" (Snyder 1968:65). Only 17 percent of Snyder's (1971:209) sample reported that having kin or friends in Denver was a reason for migrating there. On the other hand, 40 percent mentioned that an attraction of Denver was its proximity to the Reservation (Snyder 1971:209), and 55 percent of the Graves and Van Arsdale (1966)301) subsample stated that good jobs were the primary attraction of Denver.

Synder (1971:218) tentatively suggested that Navajos in Denver may form a loosely knit ethnic enclave. Elsewhere in his reports, however, he was more certain that "an enclave does not exist" (Snyder 1971:227) and that no line of evidence supported its existence (Snyder 1968:66). On the average, a Navajo knew only 17 other tribal members in Denver (Snyder 1968:59).

"As a group, 66 percent of the Denver Navajo social interactions per month are taken up by other Navajos," 14 percent by other Indians, and 20 percent by Anglos (Snyder 1968:120; 1971:222). Interestingly, "the longer a respondent resides in Denver the less he interacts with other Navajos" (Snyder 1968:60). However, as time in Denver increased, more Navajos began to interact with other Indians and non-Indians. Only 31 percent of the entire sample interacted exclusively with Navajos, while another 15 percent interacted with other Indians as well as Navajos.

Snyder (1968:136; 1971:226) felt that ethnic enclaves in general, and the Denver Navajo in particular, were fragmented into small cliques. "To best understand the Navajo situation in the city we must then study the clique structure" (Snyder 1968:138). Snyder discovered 6 cliques among 94 migrants. The data on cliques indicated that the relationship between the time spent in Denver and the degree of social assimilation was not simply linear (Snyder 1971:229).

Except for McSwain's (1965) study of the role of Navajo wives in Denver, Graves and his students ignored Navajo women. Snyder merely mentioned that there were "many single Navajo girls in Denver" (Snyder 1971:237). Aside from noting that they were objects of a good deal of attention from Navajo men, Snyder did not describe their place in the Denver Navajo social network.

While Snyder has described the social structure of the Denver Navajos on relocation, the picture of social organization is incomplete for the total Navajo population in Denver. Furthermore, basic demographic data for the 1963-1966 period are not readily available. Perhaps the most significant aspect of the social network of the Navajos relocating to Denver is the high turnover rate and the eventual return of most of them to the Reservation. For the preponderance of these relocated Navajos, Denver seemed to be a place to reside only temporarily. Perhaps this factor helps explain the lack of a Navajo enclave or sense of community in this urban milieu. It may be that the temporary residence, in conjunction with the attenuation of kinship networks, made cliques more obvious among Denver Navajo than among other urban migrant groups.

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25. LOS ANGELES, 1966

The 1960 U.S. census enumerated 12,405 Indians in the greater Los Angeles area (Price 1968:169). Price undertook a study of Los Angeles Indians in 1966. He noted that 42 percent of all Indians coming to Los Angeles received BIA relocation assistance. Furthermore, "The BIA office in Los Angeles has, in recent years, been assisting about 1,300 annually" (Price 1968:170). Price estimated the total Indian population of Los Angeles in 1966 at 25,000, or double the 1960 census figure (Price 1968:169).

There are four lines of evidence which cast doubt on Price's estimate. First, the estimate assumed a relatively low percentage of return. Ablon (1964: 297) stated that over one-third of the Indians relocating in the San Francisco Bay Area eventually left the urban area. Graves' data (1970) seemed to indicate that at least two-thirds of all Navajos relocating in Denver returned to the Reservation. Second, data from Price's own sample did not indicate unequivocally a dramatic increase in migration to Los Angeles since 1960. While 34.6 percent of his sample had arrived within the 18 months prior to his survey, arrivals between 1960 and 1964 comprised 20 percent of the sample, about the same percentage as arrived in the previous 5 years (Price 1966:5). It would appear that migration to Los Angeles was neither steady nor very permanent. Rather, each year brought a heavy influx of migrants, many of whom did not stay. It seemed that a fairly consistent proportion of the Los Angeles Indian population left Los Angeles during the 2 years after any single year of immigration. Third, the 1970 census enumerated only 23,908 Indians in Los Angeles County, and 27,572 with Orange County included (U.S. Department of Commerce, Bureau of the Census 1973: 138-139, Table 11). It seems unlikely that the late 1960s were marked by a decrease, stagnation, or reversal of the demographic trends that brought Indians from rural areas to urban Los Angeles. Fourth, Price's sampling procedures were certainly biased in a number of ways and they may have led to inclusion of more recent arrivals than long term residents. Price had to derive his sample from membership lists of "predominantly Indian churches, clubs, and centers" plus interviews obtained at "predominantly Indian bars" and at "Indian social functions" (Price 1966:1). Hence, "this census sample has tended to be drawn from the social center of.. the several thousand Indians who participate in some kind of Indian organization" (Price 1966:3). Snyder (1968:72) noted that among Denver Navajos, the length of time a Navajo spent as a resident in Denver was positively correlated with greater withdrawal from social interaction with other Navajos. It would seem likely then that the "social center" of the Los Angeles Indian population would be composed disproportionately of more recent arrivals.

Price's "basic census" form was completed for 439 households (a total of 1,188 people. This group was supplemented by another sample drawn separately (Price 1966:3). The combined samples included some information on at least 2,945 persons (Price 1968:170). If we use Price's own estimates of the total Los Angeles Indian population, we see that he contacted about 12 percent of the total. However, if we recalculate the 10-year population increase as the sum of equal annual increases, the 1966 population would have been between 19,000 and 20,000. This calculation implies that Price contacted about 15 percent of the total.

Table 25.1 shows the 10 tribes having the largest contingents in Price's sample of 2,945. Price stated that:

> Since this sample is about 12 percent of the total number of Indians in Greater Los Angeles, it is possible to approximate the total population of any relatively large tribal population by multiplying by eight the sample size (Price 1968:169).

Price estimated the total number of Navajos in Los Angeles to be between 3,300 and 3,500. Since Price's initial estimate was probably exaggerated, these figures are likely to be inflated. Using a population base of 19,500 for Los Angeles Indians in 1966, and Price's estimate that Navajos comprised about 14.5 percent of all Los Angeles Indians, we would expect the total Navajo population in Greater Los Angeles to have been about 2,760 in 1966. The 1970 census recorded only 2,204 Navajos in Los Angeles (2,384 if Orange County is included).[1]

Table 25.1: Ten Tribes with Greatest Representation in Los Angeles Sample

Tribe	Frequency	Percent
Navajo	417	14.1
Sioux	354	12.0
Cherokee	185	6.3
Creek	183	6.0
Pueblo	151	5.1
Choctaw	134	4.5
Seminole	108	3.7
Cheyenne	97	3.3
Chippewa	92	3.1
Apache	92	3.1
Total	1,813	61.2

Source: Data from Price (1968:170)

In 1970, therefore, Navajos comprised about 9 percent of the Indian population of Greater Los Angeles. It appears that Price may have over-represented Navajos in his 1966 sample. Certain factors, besides random errors, may help to explain the discrepancy between the percentage of Navajos in Price's survey sample and the percentage of Navajos (of all Los Angeles Indians) in the 1970 census. For instance, it is possible that between 1966 and 1970 the proportion of Navajos in the total Los Angeles Indian population decreased. However, this does not seem to have been the case. In Price's sample the Navajos interviewed had a quite recent median date of arrival (1964) whereas the median year of arrival for the total sample was 1960 (Price 1966:5; 1968:174). The trend, therefore, would not have been toward a lowering of the proportion of Navajos in the Los Angeles Indian population from 1966 to 1970. The Sioux were the Tribe comprising the second largest fraction of the Los Angeles Indian population, and, like the Navajo, the median year of arrival of the Sioux in the sample was 1964 (Price 1968:174). These data and the sampling procedures discussed above suggest that tribes with a larger porportion of recent migrants to Los Angeles were over-represented in Price's survey, in comparison to U.S. census figures.

Almost half the Navajo survey sample came to Los Angeles on relocation. Unlike the two other large groups in the survey, the Sioux and the Five Civilized Tribes

(Cherokee, Choctaw, Creek, Chickasaw, Seminole), Navajos tended to live in the city center (55 percent). Nearly twice as many Navajos (89 percent) spoke an Indian language than did the Sioux (46 percent) or Five Civilized Tribes (40 percent). Navajos tended to marry within their own tribe (46 percent) more than did Sioux (25 percent) or the Five Civilized Tribes (14 percent). Like the Navajo in other urban areas, those in Los Angeles were not active in tribal or pan-Indian clubs and organizations. However, they did seem to associate much more with Indians than did the Sioux or the Five Civilized Tribes. Price's detailed interviews with about 6 percent of those surveyed in each of the three major groups revealed that while 64 percent of Navajos "associated entirely or mostly with Indians," only one-third of the Sioux and only one-fourth of the members of the Five Civilized Tribes did so (Price 1968:174). Price noted further that "the Navaho stand out as distinct and sometimes despised within the general ethnic group of Indians" (Price 1968:173).

Price's study of Indians in Los Angeles really offers very little specific data on the Navajo. Furthermore, his impressionistic analysis of the Navajo, based on a biased sampling procedure, must be viewed with some caution. Samples which introduce a bias toward respondents participating in "Indian activities" are suspect when statements about the degree and type of "assimilation" of urban Indians are made.

Associated with Price's study, a survey by Jacquemetton (1966) reported on interviews with members of 30 Navajo households. There were 9 single individuals and 21 married couples. Of these latter, 16 were intratribal marriages, 3 involved Navajos who married non-Indians, and 2 were marriages of Navajos with Indians of other tribes. Jacquemetton did not report household size. Informants ranged from 19 to 45 years of age and had been resident in Los Angeles from 5 months to 13 years. The median year of arrival was 1964 (Jacquemetton 1966:1).

Jacquemetton (1966:1) reported that 73 percent of the Navajos interviewed stated that they would return to the Reservation if they could find as good a job there as they could in Los Angeles. By contrast, only 41 percent of other responding Indians expressed a desire to return to their respective reservations under similar circumstances. Unfortunately, there is no information on actual income, employment patterns, or job type for this group of Navajos.

Jacquemetton also interviewed leaders of organizations with a large Navajo membership. She was able to distinguish four relatively distinct sub-populations of Navajos in the Los Angeles area: (1) "a group of older and more affluent Navajos living in outlying areas...," some of whom had lived in the Los Angeles area for 20 or 30 years; (2) "the Navajo members of the Indian Revival Center, a large number of whom are related to one another..."; the attendance at this church was about one-third to one-half Navajo; (3) "young people many of whom came to Los Angeles via the BIA vocational training program..."; and (4) "a very large part of the Navajo population...whose social contacts are largely confined to relatives and perhaps a few neighbors" (Jacquemetton 1966:3-4). Presumably this last group represented people who were not at the "social center" of Indian activities. Together with the first group, they were the Navajos about whom there was the least information.

The main purpose of Jacquemetton's study was to measure "assimilation" or "adjustment." Her study offers little quantitative data on household and family organization or social and financial status.

Unlike Snyder (1968:72), Jacquemetton (1966:7) found that association of Navajos with non-Navajos was not correlated with amount of time spent in Los Angeles. She did, however, note that assimilation (based on association with non-Navajos) was correlated with English language skills. She added that "several other factors also appear to influence the assimilation process although these are all dependent upon knowledge of English" (Jacquemetton 1966:7).

Footnote:

[1] These figures were obtained from Dr. Sam Stanley, Smithsonian Institution, Center for the Study of Man, 1974.

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26. COLORADO RIVER RESERVATION, 1958

Between 1945 and 1951, over 100 Navajo families were relocated on the Colorado River Indian Reservation. Thus a "community" of Navajos was created in a rural-agricultural setting over 200 miles from the Navajo Reservation. Since nearly all other Navajo relocation has been to urban centers, the Colorado River Navajo are unique. Unfortunately, there is little information available about these people. We present below a summary of the scant information which can be gleaned from a survey in 1958 of the Colorado River Indian Reservation by the University of Arizona Bureau of Ethnic Research, and from Young's (1961) discussion of the resettlement program. To provide an introduction, we begin with a brief description of the events which created the situation as it was in 1958.

In 1865, Congress created the Colorado River Indian Reservation, not only for the Mohave and Chemehuevi Tribes but also for other tribes living on the Colorado's tributaries (Fontana 1963:167). For decades Anglos pressured the government to open the Reservation. When an irrigation project on the Reservation was proposed during the Depression,

> the only way to get the appropriation was to convince Congress that the proposed great irrigation system would serve not only a few hundred Mohave and Chemehuevi Indians, but Navajo and Hopi colonists who were also in need (Fontana 1963:177).

In 1935, a delegation of Navajos toured the Reservation and discussed relocation (Fontana 1963:171).

In March, 1945, the Colorado River Tribes were pressured into passing an ordinance which provided, among other things, that after a year of residence on the Colorado River Indian Reservation, a colonist from another tribe could apply for membership, unless cause could be shown for cancelling the colonist's assignment (Fontana 1963:173; University of Arizona, Bureau of Ethnic Research 1958b:58).

Relocation of Navajos and Hopis under federal auspices began in 1945. However, in the first 2 years only 18 Hopi and 1 Navajo family came to the Colorado River Indian Reservation. By 1948, only 9 Navajo "colonist" families were living on the Colorado River Reservation (Young 1961: 205). In 1948 and 1949, the resettlement-colonization program received increased funding. During the following 3 years, Navajo participation in the program increased dramatically: 15 families arrived in 1949, 60 in 1950, and 32 in 1951 (Young 1961:205). Boyce has argued that Navajo cooperation may have been gained in part by coercion:

> ...the BIA wanted the Navajo tribe to agree in encouraging some "excess" Navajo population to relocate on the Colorado River Indians' land. This was implied as the "price" to the Navajos for political support of the potential San Juan-Shiprock project (Boyce 1974:217).

But the pressure to "colonize" Navajos on the Colorado River Indian Reservation was halted in early 1952, when the Colorado River Tribes rescinded Ordinance Number 5, began litigation to halt further leasing of their land, and refused to adopt any more colonists into the Tribes. No new colonists arrived after 1952 (University of Arizona, Bureau of Ethnic Research 1958b:61; Young 1961:205).

In all, 116 Navajo families had moved to the Colorado River Indian Reservation by 1958. This number accounted for over three-fourths of all colonist families on the Reservation. About 30 Hopi families and 3 Supai families had also resettled to the Reservation. Although prior to 1952, some families had returned to their old homes, the rate of withdrawal increased after this time (Young 1961:205). Seventy-two Navajo families (62 percent) had withdrawn from the program by 1960, and of these, 88 percent left after 1952 (Young 1961:206)

Mohave and Chemehuevi opposition to further colonization was not the only factor leading to the withdrawal of families. Farm plots, originally 40 acres in area, were too small to be profitable. Not until 1953 were plot sizes increased to the 80 acres considered to be a minimum economic unit (Young 1961:206). Even increased acreage failed to halt the decline in the number of colonists and native farmers on the Reservation. Between 1952 and 1957, the number of colonist farmers was reduced by more than half (by 71 farmers), as 67 families withdrew from the colonization program. During the same period, the number of native farmers dropped by about 40 percent.

Young noted that all but 3 of the Hopi colonists became members of the Colorado River Tribes, while only 2 Navajo colonists became members of the adopted group (Young 1961:206). This difference is not only intrinsically interesting but also is relevant to the survey of the Colorado River Indian Reservation conducted by the Bureau of Ethnic Research in 1958. A census of all Reservation residents, and members of the Colorado River Tribes regardless of residence, showed that even at a time when over half the original colonist families had withdrawn from the Reservation, 28 percent of all Reservation residents were colonists. Of these 383 colonists, 279 (73 percent) had not been adopted into the Colorado River Tribes. In 1958, about 18 percent of all the families on the Reservation were Navajo. There were 44 Navajo families in residence, but only 2 at most were adopted members of the Colorado River Tribes. Thus 44 of the apparently 47 non-adopted families were Navajo. Data gathered in the Bureau of Ethnic Research on non-adopted colonists would therefore pertain mainly to Navajos, while data on the adopted colonists would apply largely to Hopi families.

Unfortunately, the Bureau survey almost completely ignored families who were not members of the Colorado River Tribes even though they were resident on the Reservation. The data available on colonists pertain only to adopted colonists and hence to the Hopi rather than the Navajo. There were 20 resident households of adopted colonists with an average size of 5.75 members. Average family size can be estimated for the Navajo by dividing the total number of non-adopted colonists (279) by the estimated number of families of non-adopted colonists (47) given above. One can thus estimate the average Navajo family size with some confidence as having been about 5.9.

The Bureau of Ethnic Research also analyzed economic data from the Reservation but provided no data on non-adopted residents. It is impossible to compare the Bureau's figures on income for a one-third sample of the total number of enrolled and adopted members of the Colorado River Tribes (mean family income of $4,624, a median of $3,350) with the income of Navajos on the Colorado River Reservation (University of Arizona, Bureau of Ethnic Research 1958a: 16-28). Young's (1958:86-91; 1961:197-208) discussion of the resettlement of Navajos on the Colorado River Indian Reservation also gives a limited overall account of Navajo economic adjustment. He did, however, summarize the situation as follows:

> Of the 44 Navajo colonist farmers remaining at Colorado River, 24 can be described as successful on the basis of farm management, income, property, home improvement and similar criteria; 12 might be classified as moderately successful, and 8 are in a borderline position (Young 1958:91).

The community of Navajos resettled on the lower Colorado River is unique. Our knowledge of this group consists largely of a qualitative description of the progress of the resettlement program and some brief notes on population and economics. Unfortunately, there is virtually no available information about other aspects of the Navajo community.

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V. TRENDS AND COMPARISONS

This review of extant community studies clearly shows a great amount of variability both over time and among different regions of the Reservation. A comparison of findings from these studies ought to reveal trends of change over time as well as patterned regional differences. Without some knowledge of prior conditions and specific regional adaptations, it is impossible to interpret contemporary data with any degree of confidence. In this section an attempt will be made to determine whether, in fact, some sense can be made from the published accounts.

Over the years, a general picture of Navajo adaptation to Reservation life has been accepted by most observers. At the onset of the Reservation Period in 1868, the Navajo are thought to have been pastoralists who relied in part on agriculture. When authors refer to the "traditional" Navajo society they usually have the immediate pre-Reservation period in mind. The basic unit of cooperation is thought to have been the matrilocal extended family. There was probably considerable regional variation due to differences in environment, subsistence economy, and culture-contact conditions. The western portion of the Reservation, more arid than the eastern, had lower population density, less agriculture, and less contact with Anglos. Over the years, the eastern portion of the Reservation appears to have continued to have had more intense culture contacts and to have made the transition to wage work more rapidly than has the western portion. More and larger centers of government administration are found on the eastern end, and off-Reservation towns are more accessible to Reservation dwellers in the east. In general, the image of western Navajo life is that of isolation and relatively undisturbed traditionalism.

Population growth and increased limitations placed upon stock-raising, especially after the stock reduction program of the 1930s, are thought to have forced increasing numbers of Navajos into the job market, and this process should be more pronounced among the eastern Navajo. Large extended families are held to be adaptive to stock-raising but not to a cash economy. Where wage work predominates, we would expect to find proportionately more neolocal, nuclear families and a decline in cooperating kinship networks. Once again, we would expect to find this more in the east than the west.

Our control groups should be comparable to similar communities at the same points in time. Red Lake, a rural pastoral area, should be similar to Shonto, Navajo Mountain, and the six communities in the tuberculosis survey (Kaibeto, Red Lake, Dinnebito Dam, Gray Mountain-Cameron, Gap-Cedar Ridge, and Coppermine). South Tuba City ought to be more like Fort Defiance, another wage work community, than like rural communities. The available data on these communities have been grouped together in three Tables in the Appendix. Where data are unavailable, grossly unreliable, or not comparable, they have been omitted from the Tables. It has not been possible to apply statistical tests when comparing means because, in most instances, measures of the distributions are not available. The Shonto and Navajo Mountain data are exceptions. More controlled comparisons among Red Lake, Shonto, and Navajo Mountain will be made in a subsequent Bulletin in which the descriptive statistics of the Lake Powell

Research Project's area surveys will be presented.

A persistent obstacle in making comparisons among communities is the lack of uniformity in the use of definitions and in data-gathering techniques. No two researchers compute annual per capita income in the same way nor do they gather data from similar sources. Researchers do not agree on the definitions of the matrilocal extended household or matrilocal postnuptial residence. Most of the studies have been conducted by individual researchers, and, consequently, sample sizes have usually been very small. Regardless of how well the research may have been done, differences among areas are unduly magnified by the use of small sample sizes.

Despite these sources of inaccuracy, however, there is ample evidence that a considerable amount of very real variation exists from area to area. Whether a comparison of extant studies can reveal the reasons for this variation, however, is a moot question. A very important area of concern is the problem of determining the degrees and types of variability which existed immediately prior to the establishment of the Reservation. There is a tendency, on the part of anthropologists, to assume that early Navajo society was homogeneous, that all Navajos herded sheep, and that matrilocal residence, matrilocal extended households, and matrilineally organized cooperating kin groups were the rule rather than the exception. Thus, when a given community is discovered to have a predominance of neolocal, independent, nuclear households, it is immediately assumed that the matrilocal extended household has disappeared as a result of an increased reliance on wage work. If it is found that one-fourth of the population in a given area owns no livestock, it is easy to conclude that the reliance upon stockraising has declined in recent years, and that this decline represents change. But what if a sizeable proportion of Navajos always lived in nuclear family units and only 80 percent of the population ever owned livestock? Should that prove to be the case, there would be evidence to suggest the persistence of a subsistence strategy rather than evidence for a major transformation. Indeed, Aberle (1961) has suggested that the Navajo reliance on a shifting multiple subsistence base has not radically changed over the past century. Raiding and working for a wealthy kinsman have been replaced by wage work, but in the main, a possibly rather old pattern is still to be observed on the Reservation.

The earliest quantified observations for broad areas of the Reservation are provided by the Human Dependency Surveys of 1936 and 1940. The findings from selected Land Management Units have been included in our Tables to provide some idea of variation in an earlier period. Prior to this time, data are scarce and often inaccurate.

Economics

In 1940, while there was considerable variation among Land Management Units within a region, the differences between east and west were not startling. The proportion of reliance on wage work ranged from 23 to 40 percent in the east and from 14 to 47 percent in the west. The range of proportions for reliance on livestock was from 47 to 68 percent in the west and from 43 to 55 percent in the east. Total per capita income in 1940 ranged from $28 to $76 in the west but from $48 to $60 in the east. Reliance on agriculture was minor in all areas, but some eastern units relied on agriculture more than did any of the western units.

When we examine trends over time, however, change becomes apparent in all areas of the Reservation.

1. The proportion of total income derived from "other" sources, primarily craft products, declined precipitously between 1940 and 1950 and has remained below 4 percent for all communities studied in the 1960s and 1970s.
2. The proportion of unearned income, primarily from welfare, increased from zero to around 20 percent between 1940 and 1950 and has continued to increase in the 1960s and 1970s. In 1973, Red Lake derived 42 percent of its total income from welfare sources.
3. The reliance on stock-raising has declined in virtually all areas, first as a result of the stock reduction program and subsequently due to the growing population and continued restrictions on grazing.
4. Reliance on wage work has also increased especially during the past 10 years.

These changes are the expected ones. Again, however, they appear to be taking place on a Reservation-wide basis. The lack of comparable studies of eastern communities since 1960 makes it impossible to tell whether the eastern area of the Reservation is wealthier or more wage-oriented than is the western area. Annual per capita incomes have increased considerably since 1940 and the Depression years. Wage-work communities such as Tuba City appear to have barely kept up with the rate of inflation, perhaps because a large portion of the population is on welfare. Both Shonto and Red Lake appear to have made some gains, however; they just kept ahead of inflation during the 1960s, but have achieved a real increase in annual income during the past 5 years. The significance of this trend cannot be ascertained until comparable analyses of Anglo earnings during the same period have been made.

It must be remembered that these are aggregate figures for each community. The higher incomes from new jobs at the strip mine on Black Mesa will significantly affect the average income level in a small population, but it is very likely that only a few individuals will hold these jobs, while the majority of the community will remain relatively unchanged.

Demography and Social Organization

In light of the observed economic trends, we would expect a concomitant shift away from matrilocal extended families to independent nuclear families. Average camp (extended family) size should decline as the proportion of independent nuclear families increases. These changes should be most apparent in areas with the least reliance on livestock and with higher per capita incomes from wage work. The trend to higher education and smaller household size should be found in off-Reservation communities and in on-Reservation wage work settlements.

The differences among communities within a large region appears to be greater than east-west differences after 1960 (see Table V.1). Prior to that time (1930-1959) the west did appear to have had larger households and camps and more households per camp. Unfortunately, only one community was studied in each half of

Table V.1: Mean Household and Camp Size in Rural Communities

Social Unit	West			East			
	Red Lake	Shonto	Navajo Mountain	Sheep Springs	Many Farms	Ramah	Klagetoh
1970-1973							
Household	6.21	6.19					
Camp	9.81	13.20					
Households per Camp	1.58	2.13					
1960-1969							
Household	5.47		5.18	5.52	6.47		
Camp	14.86		12.63	9.64	16.37	9.7	
Households per Camp	2.71		2.43	1.85	2.53		
1950-1959							
Household		5.68				5.0	
Camp		14.90				6.94	
Households per Camp		2.63				1.38	
1930-1940							
Household			6.14				5.40
Camp			15.0				7.32
Households per Camp			2.4				1.35

the Reservation during each decade, and we can have no confidence that a real east-west difference existed at that time. The large variation among the small samples of the western Reservation surveyed in 1962 suggests that the difference is only due to sample size. The average "consumption group" size of the Human Dependency Survey of 1936 suggests that the average size of this undefined unit may have been larger in the west than in the east (7.8 persons in the west as opposed to 6.6 in the east).

There appears to have been no consistent trend over time in either household or camp sizes. Red Lake and Shonto showed increased household sizes, decreased camp sizes, and decreasing household-per-camp ratios. Navajo Mountain, on the other hand, showed a decreasing household size, a slight decrease in camp size, but no change in the household-per-camp ratio. Among eastern communities, Ramah showed an increase in camp size between 1950 and 1964.

A higher reliance on livestock should be associated with large camp size and a lower proportion of independent nuclear families (see Table V.2). Ramah, in the 1950s, had the highest reliance on livestock, but the smallest camp size. Shonto, in the 1950s and 1970s, had a very low reliance on livestock but had some of the highest camp sizes reported. Household size seems to have been increasing, but the increase is not associated with camp size or with reliance on wage work. Either reporting has been remarkably poor or we have faulty notions about the relationship between social organization and subsistence economy. Jorgensen has suggested that independently of the

Table V.2: Household and Camp Size and Reliance on Livestock

Community	Mean Household Size	Mean Camp Size	Proportion of Income from Livestock (percent)	Per Capita Income from Livestock (dollars)
1960-1973				
Red Lake	6.21	9.81	7	48
Shonto	6.19	13.20	4	26
Navajo Mountain	5.18	12.63	47	176
Sheep Springs	5.22	9.64	--	--
Many Farms	6.47	16.37	--	--
Ramah	--	9.70	--	--
1950-1959				
Shonto	5.68	14.90	8	22
Many Farms	--	--	6	8
Ramah	5.0	6.94	34	56

relationships between social organization and the subsistence economy of pastoralism, large camp size and extended family relationships may be the product of "needs" generated by a dependency on unearned income and under-employment, which lead to a sharing of limited resources (Jorgensen 1971).

Table V.3 presents the proportions of neolocal and matrilocal extended families and, where possible, the proportion of total income derived from livestock. Between the 1930s and 1960s, Navajo Mountain showed an increase in the proportion of neolocal families, but in the same time the proportion of matrilocal extended families doubled. Ramah showed the expected decrease in matrilocal families and the increase in neolocality. These are the only communities for which we have adequate data pertaining to several time levels. Land Management Unit 2 was 49 percent neolocal in 1936. This was about the same value as the average percentage for neolocality at Red Lake, South Tuba, and Navajo Mountain, but was considerably higher than the average for the six communities in the western part of the Reservation surveyed in 1962. The proportion of neolocal families in Klagetoh, Unit 17, and the whole Reservation ranged from 48 to 55 percent for the period 1936 and 1938. It would appear that the proportion of neolocal families was quite high even in the 1930s. The observed fluctuations over time in any given community may be a feature of small communities and not simply a product of the shift from pastoralism to wage work. That there does not appear to be any clear association between reliance on stock-raising and proportion of neolocal families is illustrated by the fact that, in 1973, Red Lake and South Tuba showed low reliance on livestock and a high proportion of neolocality, while Land Management Units 17 and 2, in 1938, had high reliance on livestock and high proportions of neolocality.

Turning to comparisons between on- and off-Reservation populations, we see that some clear differences in household size do emerge. Household size is much smaller in off-Reservation towns than in on-Reservation communities. Rather than being a result of differences in fertility rates due to new cultural values, however, this seems to be more a function of the younger age of migrants to towns. Table V.4 shows that the sub-sample of Flagstaff families studied in 1969 who had lived in town for 10 or more years had a household size comparable to that of on-Reservation wage work communities and some rural communities. The Table shows that the average age of household head was the same for this population as it was for household heads living on the Reservation. Possible changes in fertility rates must be determined by research specifically designed to study fertility.

Conclusions

For every observation which conforms to our expectations, an equal number contradict them. In addition to real differences among communities and regions, we have noted the difficulties presented by the use of poorly selected or small samples, poor data-gathering techniques, varying definitions of household, camp, and the like, and the lack of uniform methods of presenting data. Single individuals working with limitations on their time and resources cannot be faulted for working with small samples. It is unfortunate, however, that there has been almost total disregard for reporting simple descriptive statistics in a manner comparable to that generally used in the social

Table V.3: Reliance of Livestock and Camp Organization (Percent)

Community	Proportion of Total Income from Livestock	Neolocal Camps (Independent Nuclear)	Matrilocal Extended
I. 1930-1940			
A. Eastern Rural			
Klagetoh	--	48	--
LMD 17[a]	55	55	--
Whole Reservation	--	53	32
B. Western Rural			
Navajo Mountain	--	22	11
LMD 2[a]	66	49	--
II. 1950-1959			
A. Eastern Rural			
Ramah	34	8	48
III. 1960-1969			
A. Eastern Rural			
Ramah	--	46	23
Sheep Springs	--	45	31
B. Western Rural			
Six Areas	--	23	40
Navajo Mountain	47	37	28
C. Western Wage Work			
South Tuba City	--	42	--
IV. 1970-1973			
A. Western Rural			
Red Lake	7	53	14
B. Western Wage Work			
South Tuba City	2	54	15

[a] LMD = Land Management District (see Figure 2)

Table V.4: Mean Household Size and Age of Household Head

Community	Mean Household Size	Age of Household Head (Years)
A. Off-Reservation		
Page, 1969	3.71	28.4
Flagstaff, 1968	4.82	--
Flagstaff, 1969 (resident more than 10 years)	5.28	45.0
Gallup, 1953	4.48	--
Farmington, 1953	4.30	--
Cortez, 1953	5.62	--
B. On-Reservation, Wage Work		
South Tuba City, 1973	5.60	43.6
South Tuba City, 1966	6.75	42.5
South Tuba City, 1960	6.39	41.6
Lechee' Chapter, 1969	6.90	37.4
Fort Defiance, 1959	5.60	--
C. On-Reservation, Rural		
Red Lake, 1973	6.21	48.75
Shonto, 1971	6.19	--
Navajo Mountain, 1961	5.18	--
Red Lake, 1960	5.47	45.84
Sheep Springs, 1965	5.22	--
Many Farms, 1961	6.47	--
Shonto, 1955	5.68	--

sciences. Use of such standard practice would make data-gathering methods explicit.

Aberle, discussing Navajo kinship, commented on the magnitude of the research done on Navajo kinship and social organization and the almost total lack of agreement among researchers. He reached the conclusion "that the ethnographers are not vague, but are reporting a situation of genuine flexibility and are reflecting the broad range of past and present variability among the Navajos" (Aberle 1973:96). Considering the variables which we have discussed in this Bulletin, we cannot help but conclude that the anthropologists are, in fact, vague, although real variability is present also. It seems to us that the type of research done by many anthropologists is not designed to discover variability or to isolate the variables causing it.

Each population sampled by anthropologists is called a community and is treated as an isolated, self-contained system. Variation from the expected answer can only be analyzed on a post-hoc basis. Furthermore, the "expected" conclusion is based on the assumption that pre-Reservation Navajo society was a homogeneous, self-contained, isolated system. Obviously, contemporary Navajo populations are a part of the larger regional and national economic structure. Since their arrival in the Southwest, the Navajos have been in contact with Pueblo Indians, Spaniards, and Mexicans, and there have been significant transformations in Navajo economic and social organization resulting from these contacts. That the image of the "little community" as a "primitive isolate" continues to mold ethnologists' research design and methodology is of some interest to the study of the culture of the anthropologist but not to that of the Navajo (Redfield 1955).

Virtually all of the past research on the Navajo has been descriptive and not analytical. The interpretations of the data are, at best, the formulations of hypotheses to be tested by problem-oriented research. At worst, they are disorganized attempts at post-hoc explanation. A notable exception to this rule is Aberle's detailed and careful study of Navajo peyotism (Aberle 1966). The quality of the studies varies widely. Interestingly, the better work is not that of senior anthropologists alone. The careful work at Shonto and Sheep Springs was done by doctoral candidates.

These evaluations of other studies are made not to discomfit anthropologists, but to alert those engaged in planning for the future of the Navajo that there is a need for caution in the use of research findings to date. It seems to us, furthermore, that federal and Tribal planners have been making some fundamental assumptions about the nature of change and the effects of economic development on the Navajo Reservation which need to be verified as soon as possible.

It is generally thought, for example, that increased job opportunities and large scale economic developments on the Reservation will greatly transform Navajo social organization and will gradually modernize and integrate the Navajo economy with that of the surrounding states. Whether this principle is well founded has been neither confirmed nor denied by the type of research conducted to date. Without a detailed knowledge of how new wealth is distributed throughout the population, and what changes result from new jobs, there is no way to estimate whether a social and economic transformation is occurring or not. Indeed, Aberle (1969) has suggested that Navajo poverty and undereducation are the results and not the causes of their underdeveloped condition. Economic development on the Navajo Reservation has served to siphon wealth away from the Reservation, leaving the Navajo pretty much as they were a century ago: not only dependent upon the federal government but also utilizing a subsistence strategy and social institutions which have remained virtually unchanged since before the establishment of the Reservation.

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APPENDIX[a]

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[a] Data for Page, 1969, Lechee Grazing District, 1969, and Lechee Chapter Community, 1969, were supplied by Roland Wagner (1972: personal communication).

Appendix Table 1: Economic Variables

Community	Mean Per Capita Income (Dollars)						Proportion of Total from Source (Percentage)				
	Number in Population	Wages	Stock	Unearned	All Sources	All Plus Consumption	Wage	Stock	Agri- culture	Unearned	Other
I. 1970-1973											
Western Rural											
Red Lake, 1973	325	425	48	352	845	888	50	7	0	42	2
Shonto, 1971	792	423	26	158	633	652	67	4	1	25	3
Western Wage Work											
South Tuba, 1973	333	654	23	294	998	1,002	66	2	0	29	3
II. 1960-1969											
Western Rural											
Navajo Mountain, 1962	581	113	176	71	376	--	30	47	3	19	1
Red Lake, 1960	104	--	--	--	250	--	--	--	--	--	--
Red Lake, 1966	126	179	78	59	325	--	55	24	--	18	3
Lechee Grazing District, 1969	213	322	--	--	--	--	--	--	--	--	--
Western Wage Work											
South Tuba, 1960	426	--	--	--	573	--	--	--	--	--	--
South Tuba, 1966	115	--	--	--	684	--	--	--	--	--	--
Lechee Chapter Community, 1969	152	433	--	--	--	--	--	--	--	--	--
Western Off-Reservation Towns											
Page, 1969	78	1,602	--	--	--	--	--	--	--	--	--
Flagstaff, 1968-1969	--	--	--	--	1,418	--	--	--	--	--	--
Eastern Rural											
Sheep Springs, 1965-1966	752	--	--	--	358	--	--	--	--	--	--

Appendix Table 1: Economic Variables (continued)

Community	Number in Population	Mean Per Capita Income (Dollars) Wages	Stock	Unearned	All Sources	All Plus Consumption	Proportion of Total from Source (Percentage) Wage	Stock	Agri-culture	Unearned	Other
III. 1950-1959											
Navajo Tribe 1955	--	--	--	--	450	--	--	--	--	--	--
Western Rural											
Shonto, 1955	568	162	22	55	262	291	62	8	0	21	8
Western Off-Reservation Towns											
Bellemont, 1953	700	775	--	--	--	--	--	--	--	--	--
Eastern Rural											
Ramah, 1950-1951	625	58	56	37	166	222	35	34	5	22	4
Many Farms, 1958	1,553	104	8	25	138	--	76	6	0	18	0
Eastern Wage Work											
Fort Defiance, 1959	--	--	--	--	757	--	--	--	--	--	--
Eastern Off-Reservation Towns											
Gallup, 1953	1,800	600	--	--	--	--	--	--	--	--	--
Farmington, 1953	254	500	--	--	--	--	--	--	--	--	--
IV. 1930-1940											
Western Rural											
Land Management District 1, 1936	1,256	12	26	--	51	82	23	51	0.5	--	26
Land Management District 2, 1936	905	29	23	--	66	108	44	34	0.5	--	22
Land Management District 3, 1936	1,949	63	31	--	106	160	59	29	1	--	11

Appendix Table 1: Economic Variables (continued)

		Mean Per Capita Income (Dollars)					Proportion of Total from Source (Percentage)				
Community	Number in Population	Wages	Stock	Unearned	All Sources	All Plus Consumption	Wage	Stock	Agri-culture	Unearned	Other
Western Rural (continued)											
Land Management District 4, 1936	2,422	5	21	--	36	70	15	59	1	--	25
Land Management District 8, 1936	1,666	55	17	--	83	132	66	21	1	--	12
Land Management District 1, 1940 (Red Lake, Kai-beto, Coppermine)	1,682	10	38	0	55	70	18	68	1	0	14
Land Management District 2, 1940 (Shonto-Navajo Mountain)	1,193	5	24	0	36	63	14	66	1	0	19
Land Management District 3, 1940 (Tuba-Cameron)	2,657	33	36	0	76	90	43	47	1	0	9
Land Management District 4, 1940 (Pinon)	2,856	6	15	0	28	42	22	55	1	0	23
Land Management District 8, 1940 (Kayenta)	1,720	24	26	0	58	73	47	51	2	0	28

Appendix Table 1: Economic Variables (continued)

Community	Mean Per Capita Income (Dollars)						Proportion of Total from Source (Percentage)				
	Number in Population	Wages	Stock	Unearned	All Sources	All Plus Consumption	Wage	Stock	Agri-culture	Unearned	Other
Eastern Rural											
Klagetoh, 1936	--	--	--	--	136	--	--	--	--	--	--
Land Management District 12, 1936 (Shiprock)	3,960	56	35	--	110	150	51	32	6	--	11
Land Management District 14, 1936	2,473	60	29	--	125	150	48	23	1	--	28
Land Management District 17, 1936	3,841	35	33	--	93	135	38	35	1	--	26
Land Management District 12, 1940	5,534	17	28	0	60	82	29	47	8	0	16
Land Management District 14, 1940	3,209	19	20	0	48	62	40	43	2	0	16
Land Management District 17, 1940 (Klagetoh-Ganado)	4,449	13	30	0	54	81	23	55	2	0	19

Appendix Table 2: Demographic Variables[a]

Community	Number in Popu-lation	Number of HH	Range HH Population	Mean HH Size	Number of Camps	Range HH per Camp	Mean Camp Size	Mean HH per Camp	Mean Age HHH (years)	Mean Years of Education of HHH
I. 1970-1973										
Western Rural										
Red Lake, 1973	422	68	--	6.21	43	1 - 4	9.81	1.58	48.75	3.98
Shonto, 1971	792	128	--	6.19	60	--	13.20	2.13	--	--
Western Wage Work										
South Tuba, 1973	393	70	--	5.61	48	1 - 7	8.19	1.46	43.65	6.32
II. 1960-1969										
Western Rural										
Gray Mountain-Cameron, 1962	267	43	--	6.21	16	1 - 7	16.69	2.68	--	--
Gap-Cedar Ridge, 1962	200	34	--	5.88	13	1 - 4	15.38	2.61	--	--
Coppermine, 1962	110	16	--	6.87	6	2 - 4	18.33	2.66	--	--
Kaibeto, 1962	105	19	--	5.53	10	1 - 3	10.50	1.90	--	--
Red Lake, 1962	137	24	--	5.71	9	1 - 5	15.20	2.66	--	--
Dinnebito, 1962	207	30	--	6.90	7	2 - 7	29.57	4.28	--	--
Navajo Mountain, 1961b	581	112	1 - 18	5.18	46	1 - 7	12.63	2.43	--	--
Red Lake, 1960	104	19	3 - 10	5.47	7	2 - 4	14.86	2.71	45.84	3.32
Red Lake, 1966	126	20	1 - 11	6.30	7	--	18.00	2.85	49.55	2.52
Lechee Grazing District, 1969	213	--	--	--	26	--	8.19	--	48.4	3.40
Western Wage Work										
South Tuba, 1960	426	63	1 - 18	6.76	45	--	9.46	1.40	42.5	6.40
South Tuba, 1966	115	18	2 - 12	6.39	11	--	10.45	1.64	41.6	6.70
Lechee Chapter Community, 1969	152	22	1 - 14	6.91	--	--	--	--	37.4	6.40

Appendix Table 2: Demographic Variables[a] (continued)

Community	Number in Population	Number of HH	Range HH Population	Mean HH Size	Number of Camps	Range HH per Camp	Mean Camp Size	Mean HH per Camp	Mean Age HHH (years)	Mean Years of Education of HHH
Western Off-Reservation Towns										
Page, 1969	78	21	1 - 10	3.71	0	--	--	--	28.4	9.4
Flagstaff, 1968	574	119	--	4.82	0	--	--	--	--	--
Flagstaff, 1969	132	25	1 - 10	5.28	--	--	--	--	45.0	8.44
Eastern Rural										
Sheep Springs, 1965-1966	752	144	--	5.22	78	--	9.64	1.85	--	--
Many Farms, 1961	2,292	354	--	6.47	140	--	16.37	2.53	--	--
Ramah, 1964	1,000+	--	--	--	103	--	9.7	--	--	--
III. 1950-1959										
Western Rural										
Shonto, 1955	568	100	1 - 14	5.68	38	1 - 6	14.9	2.63	--	--
Western Off-Reservation Towns										
Flagstaff, 1953	224	51	--	4.39	0	--	--	--	--	--
Winslow, 1953	148	33	--	4.48	0	--	--	--	--	--
Bellemont, 1953	700	131	--	5.34	0	--	--	--	--	--
Eastern Rural										
Ramah, 1950-1951	652	125	--	5.0	90	--	6.94	1.38	--	--
Fruitland, 1950s	1,182	--	--	5.4	--	--	--	--	--	--
Eastern Wage Work										
Fort Defiance, 1959	651	116	--	5.61	--	--	--	--	--	--
Eastern Off-Reservation Towns										
Gallup, 1953	1,800	402	--	4.48	0	--	--	--	--	--
Farmington, 1953	254	59	--	4.30	0	--	--	--	--	--
Cortez, 1953	45	8	--	5.62	0	--	--	--	--	--

Appendix Table 2: Demographic Variables[a] (continued)

Community	Number in Popu- lation	Number of HH	Range HH Population	Mean HH Size	Number of Camps	Range HH per Camp	Mean Camp Size	Mean HH per Camp	Mean Age HHH (years)	Mean Years of Education of HHH
IV. 1930-1940										
Western Rural										
Navajo Mountain, 1938	135	22	2 - 23	6.14	9	1 - 4	15.0	2.4	--	--
Land Management District 1, 1936	1,256	--	--	7.6	--	--	7.6	--	--	--
Land Management District 2, 1936	905	--	--	7.9	--	--	7.9	--	--	--
Land Management District 3, 1936	1,949	--	--	7.5	--	--	7.5	--	--	--
Land Management District 4, 1936	2,422	--	--	8.5	--	--	8.5	--	--	--
Land Management District 8, 1936	1,666	--	--	7.6	--	--	7.6	--	--	--
Eastern Rural										
Klagetoh, 1936	227	42	1 - 13	5.4	31	1 - 4	7.3	1.35	--	--
Land Management District 12, 1936	3,960	--	--	6.1	--	--	6.1	--	--	--
Land Management District 14, 1936	2,473	--	--	6.7	--	--	6.7	--	--	--
Land Management District 17, 1936	3,841	--	--	7.0	--	--	7.0	--	--	--

[a] HH = households, HHH = household heads

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Appendix Table 3: Social Variables[a]

	Camp Organization										
Community	Number of Camps	Neolocal		Matrilocal		Patrilocal		Combination		Other	
		#	%	#	%	#	%	#	%	#	%
I. 1970-1973											
Western Rural											
Red Lake, 1973	43	23	53	6	14	3	7	2	5	9	21
Western Wage Work											
South Tuba, 1973	48	26	54	7	15	2	4	2	4	11	23
II. 1960-1969											
Western Rural-Total	62	14	23	25	40	3	5	15	24	5	8
Gray Mountain-Cameron, 1962	17	7	41	5	29	0	--	5	--	0	--
Gap-Cedar Ridge, 1962	13	1	8	7	54	0	--	4	--	1	--
Coppermine, 1962	6	1	17	3	50	1	--	0	--	1	--
Kaibeto, 1962	10	3	33	2	20	2	--	1	--	2	--
Red Lake, 1962	9	1	11	5	55	0	--	3	--	0	--
Dinnebito, 1962	7	1	14	3	43	0	--	2	--	1	--
Navajo Mountain, 1962	46	17	37	13	28	2	4	14	30	0	
Western Wage Work											
South Tuba, 1960	19	8	42	--	--	--	--	--	--	--	--
Eastern Rural											
Sheep Springs, 1965-1966	74	33	45	23	31	6	8	12	16	0	0
Ramah, 1964	100	46	46	23	23	7	7	10	10	14	14
III. 1950-1959											
Eastern Rural											
Ramah, 1950-1951	86	72	84	5	6	2	2	5	6	2	2
Canyoncito, 1958	36	7	19	--	--	--	--	--	--	--	--
Fruitland, 1950s	156	101	65	31	20	20	13	--	--	5	3
IV. 1930-1940											
Western Rural											
Navajo Mountain, 1938	9	2	22	1	11	1	11	5	56	--	--
Land Management District 2, 1936	--	--	49	--	--	--	--	--	--	--	--
Eastern Rural											
Klagetoh, 1936	31	15	48	--	--	--	--	--	--	--	--
Land Management District 17, 1936	--	--	55	--	--	--	--	--	--	--	--
All Reservation 1936-40	3,700	--	53	--	32	--	5	--	10	--	--

[a] # = number, % = percent

Appendix Table 3: Social Variables[a] (continued)

	Residence								
Community	Number of Marriages	Neolocal		Matrilocal-Uxorilocal		Patrilocal-Virilocal		Other	
		#	%	#	%	#	%	#	%
I. 1970-1973									
Western Rural									
Red Lake, 1973									
Western Wage Work									
South Tuba, 1973									
II. 1960-1969									
Western Rural-Total									
Gray Mountain-Cameron, 1962					NO				
Gap-Cedar Ridge, 1962									
Coppermine, 1962									
Kaibeto, 1962					DATA				
Red Lake, 1962									
Dinnebito, 1962									
Navajo Mountain, 1962									
Western Wage Work									
South Tuba, 1960									
Eastern Rural									
Sheep Springs, 1965-1966									
Ramah, 1964	136	67	49	39	29	24	18	6	4
III. 1950-1959									
Eastern Rural									
Ramah, 1950-1951	97	8	8	47	48	33	34	9	9
Canyoncito, 1958	67	7	10	44	66	16	24	0	0
Fruitland, 1950s									
IV. 1930-1940									
Western Rural									
Navajo Mountain, 1938					NO				
Land Management D.2, 1936									
Eastern Rural					DATA				
Klagetoh, 1936									
Land Management D.17, 1936									
All Reservation 1936-40									

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[a] # = number, % = percent

GLOSSARY

availability sample	a non-random sample consisting of those people who are accessible to the investigator and who are willing to be studied
affine	relative by marriage
bilateral descent	descent traced through both males and females; unlike ambilineal descent, relationships are traced equally and impartially to all ancestors and descendants (Harris 1971: 625)
bilocal residence	residence after marriage with either set of parents of a married couple
camp	any multihousehold residence group, in which households live within shouting distance and cooperate in most subsistence and domestic activities; in our usage, the nuclear household is classed as a single household camp
clan	refers to a named kin group composed of individuals who recognize descent from a common ancestor (either matrilineally or patrilineally) but who cannot trace the actual genealogical links; Navajo clans are not residential groups and neither own nor control property
consanguinal	relationship through common ancestry
descent and descent groups	see: bilateral descent, clan, lineage, matrilineal descent, unilineal descent
lineage	refers to a consanguineal kin group composed of individuals who recognize descent from a common ancestor and who can demonstrate the genealogical links
longitudinal study	study of a particular group over time
matrilineal descent	referring to the transmission of authority, inheritance or descent, primarily through females
matrilocal camp	a multihousehold residence group composed of a senior parent couple, their unmarried offspring, and one or more households formed by this couple's married daughters, their

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	spouses, and dependent children
matrilocal residence	residence in which the groom leaves the household of his parents and takes up residence in or near the household of the bride's parents
mixed camps	camps in which some of the junior couples are living patrilocally, while others are living matrilocally
Native American Church	a primarily American Indian religious group which uses peyote as one of its sacraments; it is legally recognized as a church organization
neolocal residence	residence in which a married couple establishes a household which is independent of and at some distance from that of the parents of either spouse
nuclear family or household	a single household usually comprising a parent couple and their offspring; in many studies of the Navajo and in the tables in this Bulletin, all single household residence groups have been referred to as nuclear households or independent nuclear families
outfit	refers to a number of camps which cooperate in such larger subsistence activities as shearing and gelding and in conducting the larger religious ceremonies; these camps are usually related matrilineally, and these larger kin groupings are no longer thought to exist in most areas of the Reservation
outmigration	migration away from the area being studied
patrilocal camp	same as matrilocal camp, except it is the sons and their wives who live with the senior parent couple
patrilocal residence	residence in which the bride leaves the household of her parents and takes up residence in or near the household of the groom's parents
Peyotist	one who used the hallucinogenic buttons of the peyote cactus
polygyny	marriage of one man to two or more women at the same time
PPD+	positive results for Purified Protein Derivative test for tuberculosis

residence group	see: camp, matrilocal camp, mixed camp, outfit, nuclear family, patrilocal camp
residence patterns	usually refer to preferred post-nuptial residence, but in most studies of the Navajo refer to where a couple is living at time of interview (see also: bilocal, matrilocal, neolocal, patrilocal, uxorilocal, virilocal)
sheep unit	a sheep unit is based on the amount of forage consumed by one sheep per year, and a sheep permit specifies the number of sheep units which may be grazed; a sheep or a goat is equivalent to one sheep unit, a horse is equivalent to five sheep units, and a bovine is equivalent to four sheep units
sororal	relating to or characteristic of a sister
unilineal descent	descent reckoned through a single sex, patrilineal in the case of males and matrilineal in the case of females
uxorilocal residence	similar to matrilocal residence except that the couple establishes residence with or near the bride's mother's kin
virilocal residence	similar to patrilocal residence except that the couple establishes residence in or near the groom's father's kin
welfare in kind	welfare given in the form of free services or goods rather than direct payments to recipients

STATISTICAL TERMS

chi-square	a statistical test of the hypothesis that data cross-classified by two (or more) variables do not show a significant relationship between those variables; the test assumes independent random samples and nominal scales
df	degrees of freedom
Goodman and Kruskal's tau	tau-A and tau-B give a stronger measure of the magnitude of association which is not based on chi-square; tau is interpretable as a proportional reduction of error measure (In a 2 x 2 contingency table, tau-A

	equals tau-B equals phi-square. For a fuller discussion see Blalock 1972:295-302.)
modal	the most common score
mean $(\bar{x})$	the sum of the scores divided by the total number of valid cases (n)
median	the number such that half the scores are above and half below it
n	number of valid cases for a particular variable
N	total sample size
nominal scale	measurement based on categories
ordinal scale	measurement based on categories ranked on some dimension
p	probability level
phi-square	a measure of the strength of association based on chi-square; phi-square is easily calculated by dividing the chi-square by the sample size
t-test	a test of the hypothesis that two sample means could be drawn from the same populations; a normal distribution, random samples and interval scales are assumed

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LAKE POWELL RESEARCH PROJECT BULLETINS

No. 1 Mercury in the Lake Powell Ecosystem, by D. R. Standiford, L. D. Potter, and D. E. Kidd. ($1.50)

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